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Southern Nitrogen Plans Production Expansion; Adds Distribution Firm

SAVANNAH, GA. — Southern Nitrogen Co. has announced the start of a $1,300,000 expansion program on its facilities at Savannah, and has completed plans to acquire Millhaven Sales Corp. which operates anhydrous ammonia distribution and application facilities in Georgia. The investment in this new subsidiary, approximately $400,000, is expected to make possible increased sales of anhydrous ammonia for direct application purposes, according to John R. Riley, Southern Nitrogen president.

In reporting on the company's increased earnings during the first half of 1960, Mr. Riley noted that use of all types of fertilizer was at a high level in the firm's marketing area, and that prices of various types of nitrogen sold by the company were increased approximately 3% for the 1960-61 fertilizer year which began July 1.

Southern Nitrogen, with headquarters in Savannah, manufactures ammonia, nitric acid and ammonium nitrate solution principally for conversion into fertilizer products. Initial production started at Savannah in 1957.

Cyanamid International Reorganizes Agricultural Department; Names Heads

NEW YORK — Reorganization of the Agricultural Department of Cyanamid International to integrate marketing and technical activities has been announced by E. G. Hesse, managing director.

Henry A. Duran was named manager of the new department, which comprises the former agricultural marketing and technical service departments. Mr. Duran, who has been with Cyanamid for 10 years, was previously manager of the agricultural marketing department.

"One of the primary purposes in reorganizing the Agricultural De-

(Turn to CYANAMID, page 8)

WORLD-WIDE SOIL SCIENCE CONFERENCE

MADISON, WIS.—More than 1,000 soil scientists from all over the world are gathering here to attend the seventh International Soil Science Conference Aug. 15 to 23, the first in the U.S. since 1927.

More than 400 scientific papers were scheduled to be read by authors in English, French and German, and will later be published in five volumes. The announced purpose of the Congress here is to "promote peace and health by alleviating hunger through soil science."

Prof. Emil Troug of the University of Wisconsin, host to the Congress, is manager of the event.

The first Congress was held in Washington, D.C., in 1927, and subsequent meetings were held in the USSR in 1930, England in 1935, Holland in 1950, Belgian Congo in 1954, and France in 1956.

Congo Rioting Not Expected to Slow Pyrethrum Supply

MINNEAPOLIS, MINN. — That supplies of pyrethrum to the U.S. are not likely to be curtailed because of political disorders in the Belgian Congo, has been stated by McLaughlin Gormley King Co., importer of the material and pesticide formulator. In a note to its customers, the firm says there is no reason to be alarmed about future supplies of pyrethrum.

In the first place, the company said, the Belgian Congo, scene of the major current troubles, historically has supplied only a relatively small proportion of pyrethrum to the U.S. Of the total African pyrethrum

(Turn to CONGO, page 8)

$3 Million Expansion Plan For Southwest Potash Corp.

NEW YORK—American Metal Climax, Inc., has announced that it will spend nearly $3,000,000 for expansion of the Southwest Potash Corp.'s facilities at Carlsbad, N.M. This announcement, made by Frank Coolbaugh, president of American Metal Climax, will be the second expansion step taken by Southwest Potash Corp. since its mine and mill were brought into production in late 1952. (Complete story of company's new $7 million nitrate of potash plant at Vicksburg, Miss., in Croplife, July 18, page 1.)

According to Mr. Coolbaugh's statement, the additional production capacity is required to keep pace with expanding sales. "The new facilities will also provide for further improvement of the company's muriate product to meet the steadily advancing requirements of fertilizer mixers," he said.

American Metal Climax, Inc., maintains its headquarters in New York City. The firm is 73 years old and engages in the mining, smelting and refining of a number of basic metals as well as being in the potash and petroleum business. Metals produced by the company include molybdenum, copper, lead and zinc.

DuPont Expansion Plan Includes New Sulfuric Plant and Terminal

WILMINGTON, DEL. — The Du Pont Company on Aug. 4 announced plans for a major expansion and modernization of its sulfuric acid plant at Wurtland, Ky. The company also announced it will establish a new bulk acid terminal near New Cumberland, W.Va., to provide service for customers in the eastern Ohio and Pittsburgh areas.

Upon completion late in 1961, the Wurtland plant will become one of Du Pont's largest acid plants, according to Clark W. Davis, general manager of the company's Industrial and Biochemicals Department. The Wurtland plant serves Du Pont customers

(Turn to DU PONT, page 8)

Output of Sulfur in May This Year More Than That of 1959

Government Report Says Imports from Mexico and Canada Were Also Up

WASHINGTON — Production of 420,290 long tons of native sulfur and 59,125 tons of recovered sulfur was registered by the U.S. industry in May, 1960, according to reports of producers to the Bureau of Mines, U.S. Department of the Interior. This figure was more than the same month of 1959, but less than that of April, 1960, the report says.

The 1960 production figure, January-May, however, was considerably over the corresponding period of last year with 2,036,228 tons in 1960 against 1,817,739 tons in the January-May portion of 1959.

Producers' stocks of native sulfur decreased in May compared to the previous year. At the end of May, 1959, stocks were 4,155,945 tons and at the end of the same month this year they were 3,719,898 tons.

Imports of sulfur from Canada and Mexico were also greater in May, 1960, than for the two preceding months and the same month a year

(Turn to SULFUR, page 17)

BETTER SELLING FEATURES INSIDE.....

MERCHANDISING MARKETING SECTION

Spraying Service . . .

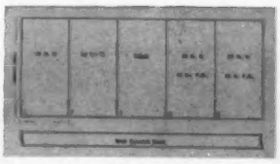
A Minnesota pilot combines a flying spraying outfit with ground units to build a top-notch spray service. Edward Ricke tells how he went about it in this issue of Croplife . . .

Story on page 9

Farm Demonstrations . . .

Two South Dakota specialists tell you step-by-step how to set up a fertilizer demonstration for corn. Measurements, details and instructions for all phases are covered in an interesting discussion appearing in this issue . . .

Story on page 14



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FAO Gets Recommendation for $2 Million Plan to Up World-Wide Use of Fertilizers

WASHINGTON—A panel of fertilizer industry representatives has made recommendation that the Food and Agriculture Organization of the United Nations undertake a $2 million five-year program, financed by the industry, to expand and improve the use of fertilizers in crop production. The panel was named by Dr. B. R. Sen, the Director-General of FAO, as a result of a meeting of industry representatives last April. It met on July 19 and 20 to study further the proposals for a fertilizer program to operate within the FAO "Freedom-from-Hunger" campaign.

Represented at the meeting were the International Potash Institute, the International Superphosphate Manufacturers' Assn., the Centre d'Etude de l'Azote, and the Sulphur Institute. Observers were present from the National Plant Food Institute (U.S.A.), the Foundation for International Potash Research, and the Olin Mathieson Chemical Corp.

H. Robin, representative of the Centre d'Etude de l'Azote and chairman of the panel, said that the intention was for the industry to make a firm commitment on the basis of figures reviewed at the meeting for the first two years of the program's operation, with the understanding that if the program developed to the satisfaction of all concerned, further support would be given for the following three years.

The budget evolved by the panel, in collaboration with the FAO secretariat, calls for expenditure of $350,000 in the first year and $450,000 in the second. The program would make an annual contribution of $30,000 to the central operating fund of the Freedom-from-Hunger campaign.

In the course of the meeting, the representatives drew up a suggested scale of contributions from various sectors of the fertilizer industry, which will be submitted to individual fertilizer associations and companies for their action. All representatives pledged the support of their sectors for the program itself, and a number indicated that this support would be reflected by a contribution of the level put forth in the scale.

The meeting, in its report to the Director-General and to the industry, said that the aim of the program was to stimulate the interest of governments and farmers of less-developed countries in the efficient use of fertilizers and to provide governments with the advice and information necessary for developing national fertilizer programs. It would achieve this through a field program of fertilizer tests and demonstrations and through developing soil-testing laboratories and services as a means of improving the use and management of fertilizers. Another major part of the program was the preparation of marketing and development studies in the field of fertilizers for the use of governments in their programs of agricultural improvement.

To Direct Construction

NEW YORK — Ian D. Ritson has been appointed to the newly created post of director of construction of Olin Mathieson Chemical Corp., announced Harlow J. Reed, corporate vice president for engineering.

Mr. Ritson, who reports to Mr. Reed, is responsible for reviewing all construction programs and progress for the corporation and its divisions and for developing standards and techniques of construction cost control.

MONTANA MEETING—Participants at the Montana Plant Food Assn.'s recent meeting in Boulder, Mont., standing, left to right are: Dick Kube and Phil Donnley, Balfour Guthrie; Warren Stensland, Cominco Products; Bob Wahke and J. Killian, Farmers Union Central Exchange; Correy Dogstrom, Teslow, Inc.; Leonard De Jongh, Farmers Union Central Exchange; F. Todd Tremblay, Pacific Northwest regional director of the National Plant Food Institute; Seated: Bill Aldworth, Farmers Union Central Exchange; George Mason, Montana Flour Mills; Lyle Ekstrom and Homer Turner, J. R. Simplot Co.; Lyle Mills, Wilson & Geo. Meyer; Ross Hansen, Phillips Petroleum Co.; John Latta, Spencer Chemical Co.; Lars Gallup, Whirry Soils Service; and Harold Ude, Farmers Union Central Exchange.

Collier Boosts Price On Anhydrous to $92, Effective October 1

LOS ANGELES—A price boost on anhydrous ammonia to $92 a ton, f.o.b. plant, has been announced by Collier Carbon & Chemical Corp. The new schedule becomes effective Oct. 1, 1960, the company says. The present quotation is $66 a ton.

The company says the move is an effort to establish a more "realistic" price to provide an adequate margin of return to the manufacturer, and to enable him to develop new and improved products, maintain adequate seasonal inventories and to furnish financial and technical service to the farmer.

Collier points out that ammonia has been sold at an "unrealistically low price in California, while ammonia manufacturers east of the Rocky Mountains have found it necessary to increase their posted prices from $88 to $92 per ton, to recover the continually rising costs of natural gas, electric power and labor."

The company added that, while its new price is based on a reasonable return on investment, it will continue to meet any competitive prices in its marketing area.

In announcing its new price schedule, Collier has also established, at buyer's option, zoned delivered prices of $98 in California and $100 in Arizona, Nevada and southern Oregon.

Retires at 83

COLUMBUS, OHIO — Vernon H. Davis, horticulturist for the Fertilizer Manufacturing Division of the Farm Bureau Cooperative Assn., Inc., retired recently at the age of 83, after 20 years of service with the association.

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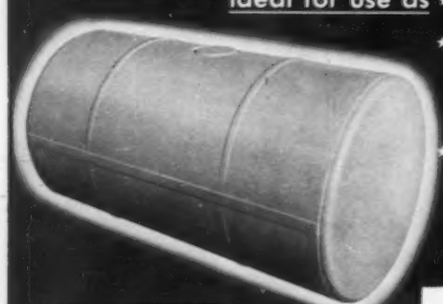

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Arkansas Rancher Wages Individual Spray Battle Against Ozark Weeds

EVENING SHADE, ARK. — Agricultural officials and farmers and ranchers are watching an experiment in which almost 7,000 acres of Ozark Mountain brush land were chemically-treated to improve pasture quality.

Although officials have been discussing chemical control of brush in the Ozarks for many years, this is one of the first large-scale projects.

Moreover, it is being watched more closely because it was carried out by an individual—not a large company or a government agency.

If it proves successful, it may start a revolution in chemical treatment to control obnoxious brush on range land in this part of the nation.

The project is being carried out by Paul Downs, a land, ranch and cattle operator who owns 23,000 acres of scrub timber and native grass land in Sharp County near here.

Even though Mr. Downs has used a wide variety of weapons in an attempt to control the brush and turn his land into better pasture, he now has centered his main attack on aerial spraying.

Hurlon C. Ray, Fayetteville, range conservationist for the U.S. Soil Conservation Service, said Mr. Downs believes the program will greatly improve his native grass lands.

After trying bulldozers, a variety of brush-clearing machines and other methods in an attempt to keep the brush in check, he finally switched in 1959 to aerial spraying.

Then, on the advice of Soil Conservation Service experts, he sprayed 600 acres to test the effectiveness of chemicals. The spraying was completed in June, and cattle were kept off the land until Thanksgiving.

In the latter part of November, he put some 90 head of steers on the treated land. Mr. Ray said the native grasses had made enough growth to permit wintering of the cattle without hay.

Outside of the dead grass, the cattle received only a mixture of cottonseed meal and salt—a popular range protein supplement.

Mr. Downs was so pleased with the results of the test that he decided to enlarge the experiment.

After selecting an additional 6,000 acres for treatment, he bought an airplane, hired a pilot and launched his battle against the fearsome brush.

Flights were started May 27 and completed June 18.

Although chemicals are now being used for brush control in this area on a limited basis, the outcome of Mr. Downs' project certainly has a tremendous bearing on the future of such operations.

Some officials have urged additional research work on the chemical control of Ozark brush land. And some even estimate that more than 3,500,000 acres could be reclaimed for pasture land if chemically-treated.

Witco Acquires Sonneborn Chemical

NEW YORK, N.Y.—Witco Chemical Co., Inc., has acquired 100% interest in privately owned Sonneborn Chemical & Refining Corp. and its subsidiaries in exchange for 300,000 shares of Witco stock, according to a joint announcement by Robert I. Wishnick, Witco board chairman, and Rudolph G. Sonneborn, president of Sonneborn.

Also reported in the announcement was the election to Witco's board of directors of three Sonneborn officials — namely, R. G. Sonneborn, Gustave Schindler, vice president, and Dr. Henry Sonneborn III, vice president and secretary. In addition, Mr. Schindler and Dr. Sonneborn have joined Witco's executive committee.

Reflecting the issue of the 300,000 new shares for the transaction, Witco's outstanding stock at the close of the day of transfer, July 28, totaled 1,510,252 shares.

New Mexico Group to Study Residue Laws

ALBUQUERQUE, N.M.—Directors of the New Mexico Farm and Livestock Bureau recently voted to make a study of the possible need for state laws to limit insecticide residues on fruits and vegetables, it was reported.

The bureau will cooperate with the state departments of health and agriculture in making the study.

There seem to be sufficient federal laws and regulations governing the amount of insecticide residues allowed on fruit and vegetables which are shipped from one state to another. However, there is no law limiting residues on such products which are both produced and sold within New Mexico.

Distributor Named

GRAND LEDGE, MICH. — The Parsons Chemical Works, manufacturing chemists, has announced that the Haynes Milling Co., Inc., Portland, Ind., has been named distributor for certain Parsons products.

Haynes Milling Co., Inc., supplies the elevator trade of northern Indiana and northwestern Ohio. It will be handling Parsons line of quality seed treatments, fumigants, and cattle sprays.

AWARD—William L. Carpenter (right), head, division of agricultural information, school of agriculture, North Carolina State College, Raleigh, is shown receiving the National Plant Food Institute-American Association of Agricultural College Editors' "Agricultural Communications Award" presented to him by Louis H. Wilson, secretary and director of information of the institute, at a special luncheon ceremony at Oregon State College, July 18. The annual award was presented to Mr. Carpenter "in recognition of he most notable growth in competence and achievement in agricultural communications during the year 1959," in competition with other members of AAACE at land-grant colleges in the United States.

SUPERVISE TESTS

MIDLAND, TEXAS—For the second year the Texas Agricultural Extension Service is supervising nematode fumigation tests on cotton farms in Midland County. This is a three-way cooperative effort, with the farmers and Dow Chemical Corp. furnishing the land and chemicals.

Results last year were promising, and they look even better this year. From what has been learned here, there is a bright outlook for nematode control in the future, says Charles Green, county agent. Mr. Green has invited farmers throughout the area to visit the three farms and see the difference in the size of cotton on treated and untreated fields.

New Uses Approved for Niagara's "Ethion"

MIDDLEPORT, N.Y. — The U.S. Department of Agriculture has approved use of ethion pesticide on peppers for the first time as well as broader application of the chemical on beans, melons and strawberries. This was reported by the Niagara Chemical Division of Food Machinery & Chemical Corp.

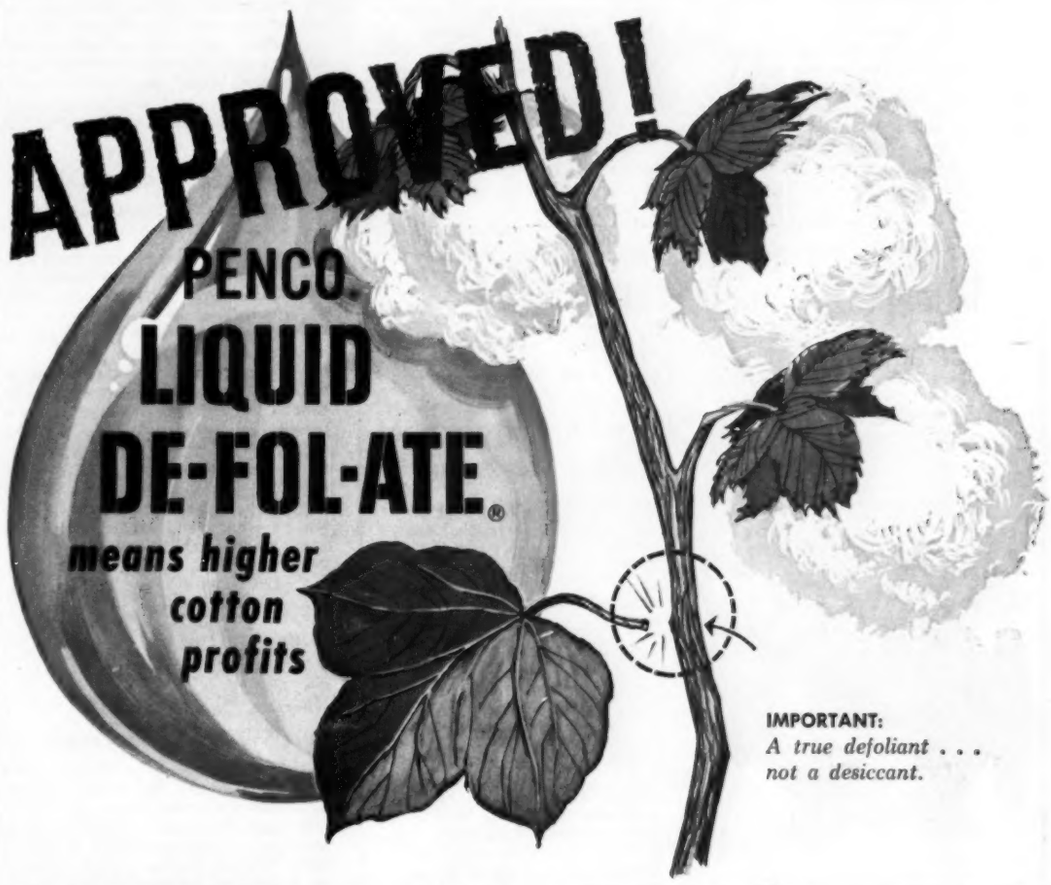
According to the new label claims, ethion can be used for control of the following additional pests: Serpentine leaf miner on peppers; lygus bug, bean leaf beetle and seed corn maggot on beans; melon leaf miner and serpentine leaf miner on melons, and strawberry leaf roller on strawberries.

Application of ethion to peppers must be on a "no-residue" basis while a tolerance of 1 ppm is permitted on beans, melons and strawberries. In all cases application should be made when insects first appear and repeated as required—with the exception of seed corn maggots on beans which entail treatment of seed before planting. Each crop and insect has a specific time period prior to harvest after which application should not be made.

Monsanto Transfer

ST. LOUIS—Ernest S. Robson of New York, a director of sales operations for Monsanto Chemical Co.'s organic chemicals division, will transfer here effective Sept. 1 in a move to consolidate the sales management function at division headquarters.

Mr. Robson has responsibility for supervision of the organic division's district sales offices at New York, Everett, Mass., Syracuse, N.Y., Pittsburgh, Wilmington, Del., and Atlanta, Ga.



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INSECT, PLANT DISEASE NOTES

Storm 'Brenda' Helps North Carolina Weevils

RALEIGH, N.C. — An extension service report indicates high weevil activity in many fields throughout the state. The heavy rains caused by the storm "Brenda" seriously upset treatment schedules in the lower Coastal Plains. As a result, many fields in the area show from 50 to 100% square infestation. Many of these fields have begun to "cut out" and squaring is at a slower rate.

The heavy weevil increase or "migration" period has not begun generally in the upper areas nor in the Piedmont, but can be expected any time. While bollworms are still not serious in many fields, generally, all growers can expect serious trouble, especially in the late fields. The cabbage looper, an old time insect and one which has been real difficult to control with any insecticide throughout the entire cotton belt, is showing up in many lower southeastern fields. It is feeding on the leaves as well as on green bolls. Mites are present in some fields and can be a serious threat in the late fields. Aphids in some fields still are a problem.

European Corn Borers Plentiful in Missouri

COLUMBIA, MO. — Adult moths emerged in numbers in the central area of the state. The peak of egg laying should follow the peak moth flights by about five to 10 days.

Fields that are still shedding pollen, fields that are showing green silks on 50% or more of the ears, and fields that have not yet tasseled are in the favored stage of development for second generation corn borers.

There is no way to tell in advance how much second brood damage will show up. In those areas where first brood was numerous, there is every reason to believe that the second brood will be still heavier.

Heavy numbers of greenish-blue corn-leaf aphids are present on the tassels and in the whorls in scattered fields of corn and grain sorghums throughout the state. The tassels of field corn which are heavily infested have been observed to turn white and fail to produce pollen. This condition is usually confined to less than 10% of the plants in the given infested field.

Spotted alfalfa aphids are increasing in numbers over the southern portion of the state, particularly in the southwest and south-central areas. Those areas where rainfall has been the lightest have the heavier infestations. This aphid can be expected to increase rapidly, if the dry weather continues.

Kentucky Entomologist Urges Prompt Grasshopper Control

LEXINGTON, KY.—Treatment in edges of fields, along fence rows and along roadways may check serious inroads of legume or row crops later by grasshoppers, the University of Kentucky experiment station entomology department says.

Grasshoppers may be numerous in grasses in some areas, says Kenneth Starks, entomologist. Later, when grasses are less desirable as food, the 'hoppers may migrate into more desirable crops and do considerable damage.

So, while the 'hoppers are concentrated along field edges and fence rows, an insecticide should be used to get them.

Khapra Beetle Called Top Stored Grain Threat

MOSCOW, IDAHO — The khapra beetle is still the one greatest threat to America's stored grain.

Roland Portman, extension entomologist for the University of Idaho, says, "We are having a good measure of success in eradicating the beetle since it was first discovered in California in 1953 and in New Mexico, Old Mexico, Texas, and Arizona shortly after that date. But it is still coming over in shipments of foodstuffs to this country from Europe and Asia. So far, inspectors of the USDA's plant quarantine service have headed the beetle off, but it's still our number one threat to stored grain."

Information reaching Mr. Portman's desk reports that inspectors have found the beetle on 27 ships entering U.S. harbors since May 1 of this year. It has been discovered and destroyed a total of 113 times since July 1, 1959. Total for the previous year was 44 times.

"The beetle is stepping up its efforts to become widespread in American stored grain as it spreads throughout other countries from its original home in India, Ceylon, and Malaya," Mr. Portman says. "Now it arrives in shipments to us from Africa, several European countries, and other Asiatic areas. If it were only in shipments of grain, we would have little trouble. But Plant Quarantine inspectors are finding the khapra beetle on dried food products, on hides, glue, and other animal products. They find the insects and their larvae on cardboard cartons, under labels on canned foods, on automobiles, steel wire, bags and wrappings of various kinds of general cargo, and in crevices and cracks in store rooms and holds of ships. The larvae can live for a long time without food, another characteristic that makes their spread easily possible if they get past quarantine."

Mr. Portman points out that this nation is doing all it can to prevent infestation of American-bound goods at their port of origin. Officials of shipping companies become more and more wary of carrying infested goods to this country as the companies discover that they must stand expense of cargo fumigation when the beetles are discovered in their ships in American ports. Ships are detained until thorough fumigation has been completed. Canadian officials are cooperating with USDA inspectors to keep the stored-grain pest from becoming widespread in both countries, Mr. Portman says.

Weevil Populations Drop in Tennessee

KNOXVILLE, TENN. — Weevil populations have dropped considerably. This indicates that the hot dry weather has taken a large toll of the larvae from the first generation. Counts made in the southern counties averaged 11% for the infested fields compared with 25% earlier. Since most of the cotton growing area got rains, the mortality of weevils should decrease. There are still enough weevils present to cause considerable damage to the late cotton.

Conditions are now ideal for the emergence of the second generation of weevils. Growers are advised to make close observations of their fields in order to time controls properly to prevent further build-up. There is considerable local migration from older cotton to the later fields.

Boll worms are causing some light damage all over the cotton growing area. Some controls needed in northern section.

Heavy aphid populations were found in the weevil infested area, requiring control. Aphid infestations are building up behind fields treated with insecticides that will control boll weevil and boll worm but not aphids.

Spider mites continue to increase and spot damage is severe. Control by spot treatments is definitely advised. Infestations will probably continue to increase.

European Skipper Threatens Ontario's Timothy Fields

TORONTO — A pumpkin colored skipper with a wing span no larger than a 25¢ piece is becoming a major menace to Ontario's timothy fields.

So reports Dr. Dave Pengelly, insect scientist at the Ontario Agricultural College. Dr. Pengelly has been studying the skipper (sometimes called a moth or butterfly) since 1957. He says that the "skipper has moved out of Grey County and has severely infested timothy in counties bordering Lake Huron."

He claims the skipper has "spread all over the southwestern Ontario" and now "appears to be moving" towards eastern Ontario. The continuous line of grass along railroads and roadsides and the prevailing westerly winds help them to spread rapidly, says the scientist.

The larva of the skipper is the culprit. Ranging from a size little smaller than a full-grown aphid, in late April, the larva feeds on enough timothy to reach ¾ of an inch in length by the third week in June. The larva then pupates for 10 days and emerges as an orange colored

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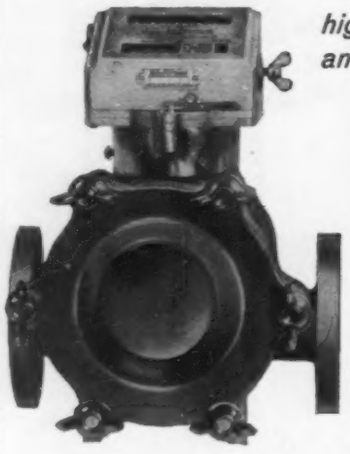

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skipper with dark wing veins and a dark border around the edge of the wings.

Grant Sweiger, agricultural representative, reports that some farms in Grey County have had as much as "20 acres of timothy cleaned out" in a few months. There are so many adult skippers every July that the roads are yellow and greasy with them, says Mr. Sweiger.

"The worms start on the tips of the leaves first," he explains. "They roll up the leaf tip and then eat just the part rolled. Gradually they move down the leaf eating it as they go. A badly infested field looks like someone went into the field and tore every leaf off by hand; only the stems are left. They even eat the heads when they run out of leaves."

Wellington County's agricultural representative, Don Black, said he's "noticed some damage to orchard grass" but that brome wasn't affected.

There will be no further European skipper damage until next year, states O.A.C. researcher Dr. Pengelly. The moth dies by the end of July and the eggs she lays will not hatch until April of next year.

"Reports about this skipper have been drifting in since 1916 but we really didn't have much of a problem with it before 1955," he said.

Spotted Alfalfa Weevil Found in Colorado

FORT COLLINS, COLO.—Observation of the first spotted alfalfa aphids in the state and the continued buildup of potato insect populations highlighted the report from the Colorado Insect Detection Committee at Colorado State University.

The first report of the spotted alfalfa aphid came from the Mack area in Mesa County where 8 to 10 aphids per 100 sweeps were found.

Entomologists noted increases in three major insects on potatoes. Populations of the green peach aphid are high in potato fields in the Milliken and Platteville areas of Weld County, they reported.

The six-spotted leafhopper, carrier of aster yellows in potatoes, increased considerably from previous week near Milliken in Weld County. Before, only one aphid per 100 sweeps was found, but this increased to 40 recently. The incidence of aster yellows in eastern Colorado is causing concern.

Population of the tuber flea beetle also is building up. Ten to 20 beetles per 100 sweeps were reported near Gilcrest in Weld County and two to four beetles per 100 sweeps in Montrose County.

High populations of the two spotted spider mite on corn in Weld, Larimer, and Adams counties were noted. Moderate populations of this insect also are showing up in Otero County.

Larvae of the fall armyworm were found in some areas of Prowers, Bent and Otero County corn fields. Adult western corn rootworms are damaging terminal growth in Weld County and controls are being applied, the committee report said.

High populations of the pea aphid in alfalfa were noted in Mesa, Montrose, and Delta counties, but numbers have been reduced in Prowers, Bent, Otero, Crowley, Pueblo, Weld, Larimer and Adams counties. Lygus bug populations vary in alfalfa, with 50 to 500 per 100 sweeps reported in Otero, Crowley, Prowers, Bent, Pueblo, Weld, Adams and Larimer counties.

Counts of tomato fruitworm eggs were low in Prowers, Bent, Otero, Crowley and Pueblo counties. In these same counties, tomato hornworm continues to be a problem although the egg count is reduced and the larvae count is 0.83 per 100 leaves.

The striped cucumber beetle was present on cantaloupe plants in Bent, Otero and Pueblo counties.

Significant numbers of onion thrips were found in Prowers, Bent, Otero, Crowley, Pueblo, Adams, and Weld counties, although there was little change in numbers.

A statewide buildup of the Mexican bean beetle is noted and damage is being reported. Eggs are hatching in Montrose County and numbers vary from light to moderate. From one to five egg masses per 10 plants were observed in Weld County.

Symptoms of virus infections continue to increase in both sugar beets and tomatoes from the beet leafhopper. Curly top incidence ranges from 5 to 10% in Mesa County sugar beets following an important increase in numbers of this insect.

Fifteen to 20 grasshoppers of various species were reported per square yard in the Roan Creek area of Mesa County.

EARLY 'HOPPERS MORE TROUBLE

SASKATOON, SASK.—Studies in the prairies show that migratory grasshoppers that hatch early are considerably more prolific than those that hatch late, according to R. Pickford of the Canada Department of Agriculture research station here.

Grasshoppers under test, that hatched on May 5, 1958, laid an average of 412 eggs during the season, while those hatched on July 2 laid only 184 eggs. The year 1958 was a favorable one for grasshoppers. In 1956, a less favorable year, grasshoppers that hatched on May 31 laid 148 eggs and those on July 20 only 14 eggs.

The migratory grasshopper usually takes from about six to eight weeks to develop into a mature adult. Egg-laying may continue from then until freeze-up. However, it usually lays the greatest number of eggs during the hottest part of the summer, from about mid-July until mid-August. The gradual lowering of temperature during the autumn causes a gradual reduction in egg laying, so the early-hatched grasshoppers have a longer period, and the most favorable period for laying eggs.

Grasshoppers that do not hatch until late June do not begin to lay eggs until late August, when temperatures begin to decline. Further, their egg-laying period is shorter by a month or more than that of grasshoppers hatched in May.

Important factors that bring about early hatching of grasshoppers are: early egg-laying the previous year; fine weather during the previous fall to allow grasshopper embryos to develop as far as possible, and warm weather during early spring.

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North Central Weed Control Conference to Hear Papers on All Aspects of Herbicides

MILWAUKEE, WIS. — Every aspect of weed control from use of herbicides in forests to public health considerations will be covered in the 17th annual meeting of the North Central Weed Control Conference to be held in Milwaukee Dec. 12-14, according to an announcement by D. R. Peterson, University of Wisconsin, chairman of the local arrangements committee. Conference headquarters will be Hotel Schroeder.

According to present plans, the opening morning, Dec. 12, will be devoted to a general meeting, program of which will include a review of use of herbicides in forest management and a discussion of granular herbicides by a number of authorities in these fields.

An evening program has been arranged for research and technical men of the industry who will present reports on new products recently released, or which will become available in time for the 1961 season.

Sessions during the final two days of the meeting will cover subjects including annual and perennial weeds; vegetation control in forestry and wildlife management; weed control in turf; aquatic weeds and public aspects of weeds; regulatory and extension; ecological, physiological and related botanical aspects of weed control; weed control in agronomic crops; weed control in horticultural crops, and vegetation control in highway rights-of-way and industrial areas.

Notices have been sent to potential authors of papers to be presented at the meeting, with instructions to submit title and brief summary of paper to the respective section chairmen by August 30.

Additive Booklet

WASHINGTON, D.C.—A manufacturers guide to legal and technical considerations presented by the Food Additives Amendment of 1958 has been published by the Manufacturing Chemists' Assn. Entitled "How to Proceed Under the Food Additives Amendment," the 12-page booklet is the first published section of a seven-part manual on food additives.

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Herbicide Decline in North Dakota Deplored As Threat to Farmer

FARGO, N.D. — Farms in North Dakota, especially in western parts of the state, have let down on chemical weed control in crops in each of the past three years since 1957.

The decline in chemical weed control is deplored by L. A. Jensen, extension agronomist at North Dakota Agricultural College, who feels that use of chemical sprays should be on the increase if farmers are to protect themselves adequately from financial loss.

Chemical spraying dropped from seven million acres in 1957 to four million acres in 1959. Dry conditions early in the season with resulting poor crop prospects are believed to have discouraged the weed spraying practice.

Selective chemical weed control in growing crops does not replace good cultural practices, the NDAC crops man says, but chemicals do permit weed control during the crop growing season and permit some cropping changes.

For example, with present chemicals, flax can be planted earlier, and control of both broadleaved weeds and annual grasses, except wild oats, can be obtained.

Chemical weed control helps to protect crop investment. By the time crops are 4 to 6 in. tall and ready for spraying a large amount of money per acre in land, seed, fertilizer and seedbed preparation has been invested. "It's a poor business risk to allow weeds to rob maximum crop yield when control costs so little," Mr. Jensen points out.

Three years of farm studies in Manitoba showed weeds cut wheat yields 15.7%, barley 12.8%, oats 9.8% and flax 24.1%. Using these percentages, North Dakota loses $75 million or about $1,250 per farm, or about $6 per crop acre, because of weeds.

Spraying for weed control protects investments in somewhat the same way as hail insurance. Instead of spraying fewer acres each year, farmers will be ahead to spray more acreage, according to Mr. Jensen.

Pest Control Group Meets in South Carolina

MYRTLE BEACH, S.C.—The annual tri-state pest control convention of the North Carolina, South Carolina and Georgia Pest Control Associations, opened here Friday, Aug. 5, with president Reeves Gressett, Jr., of the South Carolina association presiding.

Dr. H. R. Johnston, officer in charge, Forest Insect Laboratory, Forest Service Experiment Station, Gulfport, Miss., spoke on the stability of chemicals in the soil.

Questions from the floor were answered by a panel consisting of Dr. Johnston; Dr. John W. Sanders, chief of the Atlanta district of the Food and Drug Administration; R. J. Kowal, chief of the division of forestry insect research, U.S. Forest Experiment Station, Asheville, N.C., and Dr. H. O. Lund, head of the department of entomology, University of Georgia, Athens, Ga.

An address Aug. 6 by Dr. Philip Spear, technical director, National Pest-Control Assn., Elizabeth, N.J., together with discussions and business meetings for each state, featured the concluding session of the convention.

Asst. Superintendent Dies

BUFFALO, N.Y. — Anthony Randazzo, 57, assistant superintendent of Darling & Co., a fertilizer manufacturing firm, died recently in a Buffalo hospital. He was associated with the Darling firm for 28 years. His wife and two daughters survive.

Two Win VPI's Top 1960 Awards

BLACKSBURG, VA.—Ralph Benjamin Douglass, chairman of the board of the Smith-Douglass Co., Inc., in Norfolk, and Harold W. Craun, dairy farmer of Roanoke County, received the highest accolade awarded by the Virginia Polytechnic School of Agriculture.

Ralph B. Douglass

The two men were presented the 1960 Certificates of Merit, awarded annually to individuals judged to have made the most outstanding contributions to Virginia agriculture. They were nominated by staff members at VPI and approved by the board of visitors.

The presentation was made at the closing session of the Institute of Rural Affairs.

Mr. Douglass came to Virginia in 1920 as vice president of the Eastern Cotton Oil Co. at Norfolk, serving there until 1927. That year he and Mr. Smith organized the present Smith-Douglass Co. He served as vice president from 1927 to 1950 and as president from 1950 to 1957, when he was made chairman of the board.

He was consultant as a dollar-a-year man to the War Production Board during World War II, was chairman of the organizing committee of the American Plant Food Council, Inc., Washington, and was one of the organizers of the Plant Food Institute of North Carolina and Virginia, serving as its president in 1945. In 1954, he was appointed by Gov. Stanley as a member of the Commission on State Capital Outlays, and recently was appointed by Gov. Almond to again serve on the commission. He was one of the organizers and a member of the board of directors of the National Plant Food Institute.

Mr. Craun, a native of Rockingham County, received his B.S. degree in dairy husbandry from VPI in 1935.

Bemis Earnings Up

ST. LOUIS — Bemis Bro. Bag Co. sales for the first six months of 1960 were $66,357,058, an increase of 4% over the comparable period last year, and the company's net income was $1,529,526, or 16% higher than a year ago. Earnings per share of common stock were $2.15 for the first six months as compared with $1.84 in 1959.

SCHOLARSHIPS PROVIDED

SACRAMENTO—Two new annual cash scholarships have been provided for deserving students in soils, crops and related subjects, at Fresno State College and Chico State College, by the Soil Improvement Committee, California Fertilizer Assn.

The scholarships, in the amount of $100 each, will be awarded annually, beginning with the 1960-61 school year, to one student at each of these colleges. Recipients will be chosen by the respective school scholarship committees on the basis of scholastic accomplishments and extra-curricular activity related to agriculture.

These two scholarships supplement four other annual cash scholarships, each in the amount of $100, which the Soil Improvement Committee has been awarding to two students on each of the two campuses of California State Polytechnic College at San Luis Obispo and at Pomona—for a number of years. As in the case of the new awards, all recipients are chosen each year by the school scholarship committees.

How's Business?

Upward Trend Noted In Company Reports For First Six Months

Net Income Up for Southern Nitrogen

SAVANNAH, GA.—Net income of Southern Nitrogen Co. for the six months ended June 30, 1960 was $1,446,000, an increase of 30% over net income of $1,107,000 during the first half of 1959, John R. Riley, president, reported Aug. 1. Net income during the 1959 period included insurance recoveries relating to business interruptions in prior years.

First-half 1960 income was equal to $1.16 a share on the 1,250,000 shares of common stock outstanding, compared with net of $1,107,000, equal to 89¢ a share on the same number of shares last year.

●

Stauffer Reports Its Earnings Down Slightly

NEW YORK—Net earnings of Stauffer Chemical Co. during the second quarter of 1960 were $15,772,000, or 63¢ per share on sales of $61,140,000, the company reports. Comparable 1959 figures were $6,693,000 or 73¢ per share on sales of $64,336,000.

Sales and earnings for the first six months of this year were $114,349,000 and $10,820,000 or $1.18 per share, respectively, compared with sales of $117,221,000 and earnings of $11,649,000 or $1.27 a share for the first half of 1959.

The report says that demand for some products used by the petroleum industry, fertilizer manufacturers and agriculture was substantially lower this year.

●

U.S. Borax Enjoys Record Nine-Month Sales

LOS ANGELES — United States Borax & Chemical Corp. achieved record sales and increased earnings for the nine months ended June 30, it was noted Aug. 1 in the company's quarterly report to shareholders.

James M. Gerstley, president, said sales of $51,203,881 for the first nine months were 8% above sales of $47,319,803 reported for the similar period last year.

Net income for the three quarters of the current fiscal year amounted to $5,394,190, equal to $1.17 per common share, after preferred dividend requirements on the 4,194,515 shares outstanding. Net income for the similar period last year amounted to $4,676,029, equal to $1.00 per share on the 4,186,925 shares then outstanding.

●

Spencer Fiscal Year Sees Improvement in Earnings

KANSAS CITY, MO.—Net sales and earnings of Spencer Chemical Co., including the recent consolidation of the Pittsburg and Midway Coal Mining Co., for the fiscal year ended June 30 were slightly larger than in the previous year, the company reports.

Preliminary figures showed consolidated sales of $74,094,050, compared with $73,031,289. Net income amounted to $6,702,148, equal after preferred dividends, to $2.27 a share on the outstanding 2,719,556 shares. In the previous year, net income was $6,653,160, equal to $2.25 a share, adjusted to the present capitalization to include the shares issued in connection with the acquisition of the coal company and the 2 for 1 stock split-up.

Approximately 56% of the $1,062,761 sales gain for the fiscal year was attributable to chemical operations, while the balance represented increased volume of coal sales, John C. Denton, president, announced.

●

Increased Sales and Net For Olin Mathieson Corp.

NEW YORK—An increase in sales and earnings for the first six months of 1960 was reported by Olin Mathieson Chemical Corp. In its quarterly statement to stockholders, the firm reported sales and operating revenues in the U.S. and Canada totaled $348,281,000 in the six-month period ended June 30, compared with $347,296,000 in the first half of 1959.

Net profits in the first half of this year amounted to $18,666,000, or $1.40 per share, compared with $17,504,000, or $1.32 per share, in the first half of 1959.

TGS Sales Drop

NEW YORK—Gross revenue from sales of Texas Gulf Sulphur Co. for the first half of 1960 amounted to $29,117,460, compared with $33,024,848 for the same period a year ago, according to the company's semi-annual report to shareholders. Net income for the first six months of 1960 was $6,128,128, equivalent to 61.2¢ a share on the 10,020,000 shares in the hands of stockholders. This compares with earnings of $6,969,975, or 69.6¢ a share, for the first half of 1959.

●

IMC Earnings Up 21% For 1959-60 Fiscal Year

CHICAGO, ILL.—International Minerals & Chemical Corp. has reported a 21% gain in earnings on a 10% gain in sales for the fiscal year ended June 30, 1960.

Record-breaking sales totaled $123,870,000 compared with $112,560,000 last year, the previous peak. Net earnings were $7,481,000 or $3 per share on the 2,365,164 common shares outstanding, compared with $6,189,000 or $2.47 per share last year.

Thomas M. Ware, IMC president, said all divisions of the company operated profitably. Major earnings gains were contributed by the Agricultural Chemicals Division, which produces fertilizer ingredients, he said.

●

Notes Six-Month Loss

SAINT LOUIS, MICH.—With earnings from regular business temporarily handicapped by adverse going-on-stream conditions at its Port St. Joe, Fla., seawater magnesia plant, Michigan Chemical Corp. reported a six-months loss of $128,000 or $0.17 a share on its outstanding 769,587 common shares. In the first half of 1959 earnings were $346,000 or $0.45 a share, of which $0.08 represented a non-recurring gain on the sale of capital assets.

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CYANAMID

(Continued from page 1)

partment was our desire to de-centralize the technical service and field development programs within a system of agricultural regions strategically located throughout the world," Mr. Hesse stated.

Such a regional concept, he emphasized, will facilitate research aimed at the application of present products, and the development of new products, against specific food-raising problems in specific areas. Cyanamid's line of agricultural products, Mr. Hesse noted, encompasses agricultural chemicals, veterinary medicines, animal feed supplements and food industry products.

J. R. G. Sutherland, formerly director of development, agricultural chemicals, was named assistant manager of the department, a new post, and Neal E. Shafer was appointed to the post formerly held by Mr. Sutherland. Evan W. Hansen, who came to Cyanamid from Iowa State University, was named assistant director of development, agricultural chemicals.

Joseph J. Sanjurjo was named assistant director of development, animal feed products.

CONGO

Continued from page 1

production estimated for next season by various authorities in Africa, the Belgian Congo accounts for about 13%.

Furthermore, the statement adds, even if greater dependence were placed on the Congo for supplies, "we would be quite confident that they would not be interfered with by the present political disturbances."

MGK pointed out the geographic setup of the major pyrethrum-producing areas, stating that the protectorate of Ruanda-Urundi, from which most of the Congo-produced pyrethrum comes, will continue to be a protectorate of Belgium and is thus not likely to become embroiled in the current disorders.

Physically, most of the western border of Ruanda-Urundi is separated from the Congo by Lake Kivu and Lake Tanganyika, and it is contiguous to the Belgian Congo for only a relatively short distance.

"We expect Ruanda-Urundi pyrethrum to come through to Kenya and to be shipped from there without difficulty," the statement said. "The Ruanda-Urundi country is more than a thousand miles from Leopoldville where the rioting has been so severe, and if the flowers are shipped eastward through Tanganyika and Kenya, there is no reason why the crude extract cannot be shipped from Mombasa and Dar es Salaam on the east coast of Africa, rather than from Matadi on the west coast, near Leopoldville."

DU PONT

(Continued from page 1)

in the Kentucky, West Virginia, eastern Ohio and western Pennsylvania areas.

The new bulk acid terminal will be located on a 70-acre site along the Ohio River about six miles downstream from East Liverpool, Ohio. Docking and liquid terminal facilities will be installed to handle acid shipped by barge from the new Wurtland plant. The plant also will have adequate facilities for storing and reclaiming acid used in petroleum refining.

Mr. Davis said the plans are part of Du Pont's sulfuric acid modernization program which has resulted in the replacement of obsolete units or construction of new plants at nine locations since 1945. Another new sulfuric acid plant under construction at Houston, Texas, is expected to be completed early next year.

Eight New Members of NPFI Are Announced

WASHINGTON, D.C.—Eight companies have been voted into membership in the National Plant Food Institute recently, Paul T. Truitt, president, has announced.

The addition of new members gives impetus to the Institute's program to expand the fertilizer market, Mr. Truitt said.

New members are as follows:

Central Resources Corp., New York, N.Y.; Crystal Chemical Co., Inc., South Sioux City, Neb.; Goodpasture Grain & Milling Co., Inc., Brownfield, Texas; Kickapoo Valley Chemical Co., Atlanta, Ill.; Minnesota Liquid Fertilizer Co., Minneapolis, Minn.; Phinneys, Larned, Kansas; Plainsman Fertilizers, Inc., Plainview, Texas, and Tri-State Fertilizer Co., Burlington, Iowa.

Arizona Aerial Operators Plan 1961 Convention

LITCHFIELD PARK, ARIZ.—Plans are being made for the Arizona Aerial Applicators Assn.'s 8th annual conference to be held Jan. 12 and 13, 1961, in Litchfield Park, Ariz. At present the schedule includes association business meetings and demonstrations at the local airport. Convention headquarters will be the Wigwam Resort in Litchfield Park, near Phoenix. The election of officers and directors of the association is also scheduled.

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NEW, BIG CAPACITY SPREADER. For accurate, precision spreading of herbicides, insecticides and other pesticides, pelleted and granular fertilizer, seed, lime, ice melters, etc. Hopper capacity, 200 pounds. Use wherever large areas must be covered quickly. Covers a 6- to 8-foot swath with most materials. Tapered edge eliminates skips and overlaps.

NEW CYCLONE MODEL 20 (left). For fast, precision spreading of pelleted and granular chemicals. Capacity 3 gallons or approx. 20 lbs. Rate chart lists brand names and gauge settings for recommended applications — 4 oz. per 1,000 sq. ft. to 375 lbs. per acre. Shield protects operator.

FAMOUS CYCLONE HAND SEED SOWER (right). Accurately and quickly distributes all smooth grass seed and grain, pelleted and granular fertilizer. Exclusive double - oscillating feed. Instant shut-off.

CYCLONE POWER SEEDER (right). Whether used for top dressing nitrate, applying potash or phosphate, sowing small grains, legumes or grasses, or spreading granular pesticides, the Cyclone model S-3 does a fast, accurate job. Spreads up to a 30-foot swath. Operates from heavy duty flexible shaft. Double agitator, easy setting rate gauge and positive shut-off. 3 bushels capacity.

ELECTRIC MODEL M-3 (above). Similar to model S-3, but powered by an electric motor. Suitable for applying lightweight granular materials and seeding.

THE CYCLONE SEEDER CO., INC. URBANA 7, INDIANA

Minnesotan Uses Aircraft, Ground Units to Build Top-Notch Spray Service

By J. I. SWEDBERG
Special Croplife Writer

Edward Ricke of Morgan, Minn., has been in the business of applying chemical sprays for six years and finds at least two practices important in selling farmers on his spray program. They are: 1) do a good job, and 2) don't overcharge the customers.

Mr. Ricke uses an aircraft valued at $8,500 when new and two ground sprayers valued at $3,000 each in his spraying operations.

The plane, he estimates, with reasonable care and upkeep should last for 20 years, and the ground machines at least 15 years. Mr. Ricke emphasizes that he has not been in business that long, so the figures are merely estimates.

The advantages of using a plane in the application of chemicals, he says, are: 1) wheel tracks in the field are eliminated; 2) there is more uniformity in the distribution of the chemical; 3) a plane does the job faster, and 4) travel in muddy fields is avoided.

Windy weather, on the other hand, is a disadvantage in plane operation, but this can be largely overcome by spraying in the mornings and evenings.

Higher concentration of chemical is applied by plane because the supply tank holds 100 gal., sufficient for 50 acres. When high volume application is needed ground equipment is used.

A plane, Mr. Ricke says, will cover about 500 acres on a good day; the ground rigs each cover 125 acres a day.

Charges of $1 an acre plus cost of chemical are made for each type of equipment.

Farmers depend on the operator's judgment as to the type of machine to use for a particular job. In 1959 7,000 acres were plane sprayed, and 5,000 acres treated with ground equipment.

The plane is used for spraying weeds in grain, for control of canker worms in groves, root worm control, and for spraying corn after the silks and tassels have dried. Spraying corn by plane during silking and tasseling is avoided to prevent damage to pollination.

High volume applications in preemergent treatments are made with ground equipment, using a number of herbicidal products.

When the crop being sprayed is in the growing stage, amine weed sprays are used, esters being employed later in the season. When using the ground equipment in corn in the silking stage, drop nozzles are employed, to avoid getting chemical on the silk or tassels.

A charge of $20 per grove is made for application of pesticides to control rootworm, with a total of 30 groves having been treated in 1959. Reports indicate that the worms disappear in a day, Mr. Ricke says.

With the prevalence of cockle burrs in soybeans it has been the practice to spray this crop. Since beans are killed if sprayed in the growing stage with anything that will kill cockle burrs, Mr. Ricke's practice is to postpone the application until fall when the leaves are ⅔ yellow. At the start of the program, esters are used, and later fuel oil is added to the esters.

This type of spraying controls cockle burrs, Mr. Ricke reports, because tests of cockle burr seed after spraying indicate that its germination is rgeatly reduced.

EDWARD RICKE, Morgan, Minn., uses this Piper aircraft to spray fields in his area. Mr. Ricke feels that doing a good job and fair charges to his customers are important in selling a spray program.

About 800 gal. of chemicals, mostly weed spray, were applied last year. Mr. Ricke buys at wholesale and sells at retail. Practically all the chemicals he sells are applied by him.

In organizing his work with the plane, he uses clear areas near the job for landing, and sometimes lands on roads, which facilitates loading. Chemicals and water are delivered to the landing site by truck. The truck operator assists in stepping off the field and acting as flagman for the guidance of the pilot.

On ground equipment, one man operates each rig while a third man delivers the spray materials.

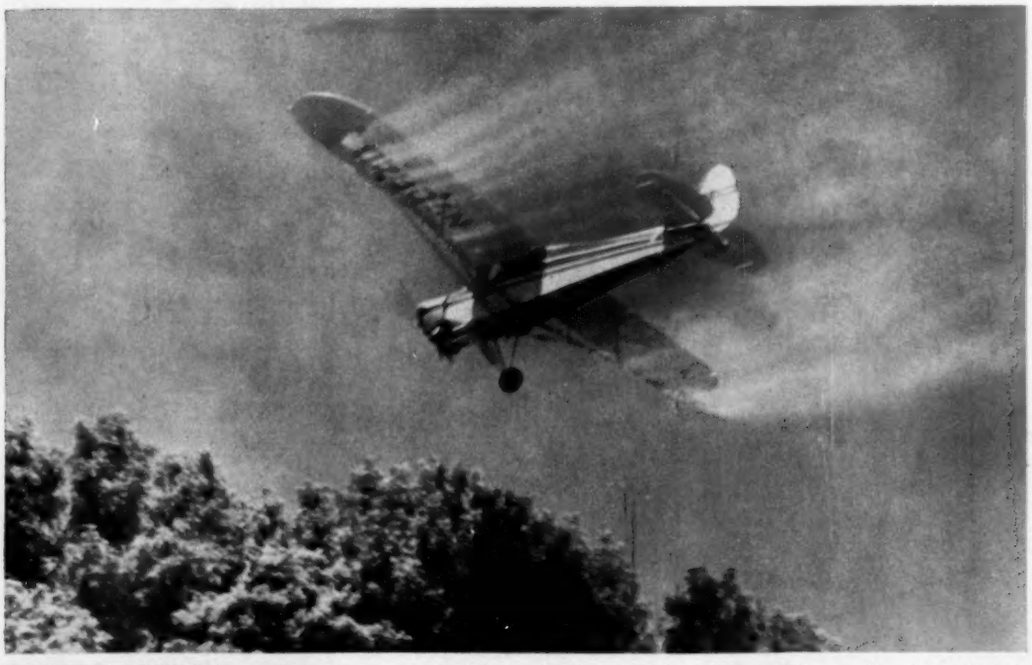
The firm also uses the ground equipment for detopping corn. Mr. Ricke has mounted a homemade device with circular blades on the spray rig which is operated by a gas engine. The set-up will cut the tops off six rows of corn at a trip.

About 700 acres of detopping is done annually, but this figure varies with the erectness of the corn.

Advantages for the detopping process according to Mr. Ricke are: 1) it prevents ear drop; 2) it makes for easier picking and 3) in some cases it will speed up drying.

Mr. Ricke promotes new business in a number of ways. These include doing good work, mailing boxholder letters, advertising in newspapers and word-of-mouth advertising by satisfied old customers.

The use of a helicopter is being considered, Mr. Ricke says. However, since cost is an important factor here, Mr. Ricke has postponed a decision.



SPRAYING GROVES for canker worms is a specialty of Edward Ricke, Morgan, Minn., in his Piper aircraft. Mr. Ricke charges $20 per grove for spraying.

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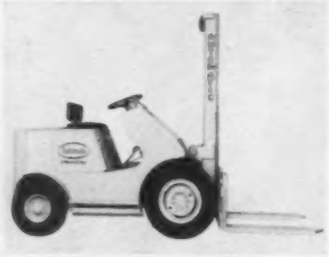


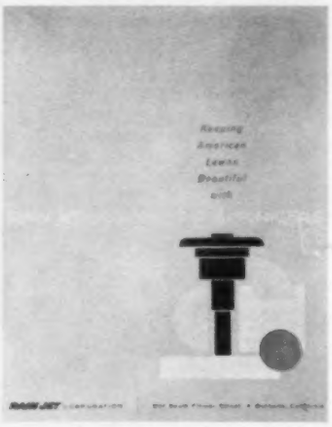
company says. It is designed to provide optimum torque output at a lower rpm requirement. It has fast acceleration and a 9 mph travel speed. For detailed information about the fork truck, check No. 6086 on the coupon and mail.

No. 6081—Chemicals Catalog

Food Machinery & Chemical Corp. announces the availability of a catalog of all its chemical products. Called "FMC Chemicals," the 36-page brochure lists FMC chemicals alphabetically with physical data and uses. A supplementary listing highlights the major use areas of the company's chemicals. For copies, check No. 6081 on the coupon and mail.

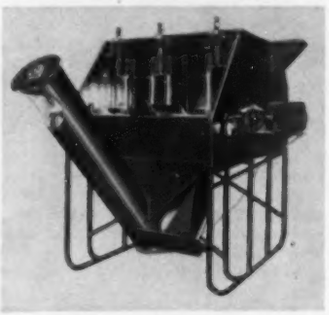
No. 6084—Sprinkler Catalog

Rain Jet Corp. announces the availability of a 24-page, two-color catalog describing its line of 16 underground sprinkler heads. The various patterns and sizes including squares, rectangles, full circles, half circles and quarter circles, are described. Coverage, discharge and pressure tables are included. For copies of the catalog, check No. 6084 on the coupon and mail.



No. 6079—Fertilizer Mixing Plant

A self-contained fertilizer mixing plant has been announced by Continental Sales Co. According to the



company, the plant, called "Blend O-Mixer," is 17 ft. by 5 ft., is completely automatic and delivers one ton of fertilizer every three minutes. The ratio of ingredients is controlled by an electric timer. Company literature says that freight and handling costs are reduced because ingredients such as nitrogen, potash and phosphorus are drop-shipped direct to the plant. Hopper cars are automatically unloaded by the tubular conveyor and automatically stored in five bins of 100 ton capacity each. The unit can be obtained in three ways: By buying the unit and installing it in a building owned by the retailer; building a plant and installing the unit, and by rental of the unit at a tonnage rate. For more information, check No. 6079 on the coupon and mail.

No. 6083—Drum, Barrel Truck

A drum and barrel truck, designed to let one operator easily place heavy drums on pallets, has been announced by Valley Craft Products, Inc. Called the "Ezy-Rol Barrel Cart," the design of the unit allows the barrel to

be carried at pallet height so that in one forward motion the drum can be placed on a pallet with a minimum of operator effort. The main frame of the truck is constructed of heavy steel tubing with a 1 in. diameter replaceable axle. It is also available in aluminum where light weight is a factor. Wheels are equipped with ball bearings. Solid rubber tires or pneumatic wheels are optional. For details, check No. 6083 on the coupon and mail.

No. 6082—Ammonium Nitrate Booklet

"Facts You Should Know About Fertilizer Grade Ammonium Nitrate" is the title of a publication recently released by Phillips Petroleum Co. Written by P. W. Tucker, R. S. Neff and A. F. Dyer, the booklet is illustrated and contains easy-to-read, factual information about ammonium nitrate. Copies of the booklet can be obtained by checking No. 6082 on the coupon and mailing.

No. 6087—Sales Information

Wendnagel & Co., Inc., announces a "Data Folder" which contains ideas and information on how to sell more liquid chemicals. The company, which manufactures tanks, has prepared a price list, description and pictures of its "Polycel" tank. Also included are charts on chemical resistance, a handbook and bulletins giving information on tanks in general. The bulletins contain charts comparing costs, materials of construction and maintenance of tanks. The folder can be obtained by checking No. 6087 on the coupon and mailing.

No. 6085—Dust, Spray Guide

A pest control guide designed specifically for vegetable growers has been published by Niagara Chemical

Division of Food Machinery & Chemical Corp. The 20-page guide contains facts and figures on dusting

Send me information on the items marked:

- ☐ No. 6079—Fertilizer Mixing Plant
- ☐ No. 6080—New Type Fertilizer Spreader
- ☐ No. 6081—Chemicals Catalog
- ☐ No. 6082—Ammonium Nitrate Booklet
- ☐ No. 6083—Drum, Barrel Truck
- ☐ No. 6084—Sprinkler Catalog
- ☐ No. 6085—Dust, Spray Guide
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and spraying a wide variety of vegetables and pests, the company says. A chart spells out dusts, sprays and pre-acre dosage recommended in treating certain specified pests on 23 vegetables. Other charts deal with tolerances and use limitations of each recommended insecticide and fungicide; quantity of commercial product needed to provide specific amounts of active ingredient per 100 gal. or per acre. For copies of the guide, check No. 6085 on the coupon and mail.

No. 6080—New Type Fertilizer Spreader

Tyler Manufacturing Co. is placing on the market a trailer-type spreader designed to haul and spread fertilizer quickly and efficiently. The machine's hopper dimensions are 60 in. by 84 in. and it will carry 2½

tons. Spread pattern is approximately 45 ft., and the machine can cover 30-60 acres an hour, depending upon field speeds of from 6 mph to 12 mph. The makers claim that the four-wheel spreader may be towed on the highway at speeds up to 60 mph. Other features noted by the makers include wheel-driven conveyor with no clutches; sealed ball bearings used throughout; galvanized steel conveyor belts; V-belt drive, and accurate metering adjustment. For more information on the spreader, check No. 6080 on the card and mail.

National Fertilizer Use Below Profit Levels, Says USDA

CHICAGO—Fertilizer use on many crops is below the level that would be most profitable for most farmers, reports the Midwest division of the National Plant Food Institute, in citing a statement by U.S. Department of Agriculture economists.

NPFI quotes D. B. Ibach and R. C. Lindberg, of the USDA's farm economics research division to the effect that: "Projected crop production needs can be met more economically through the use of more fertilizer and fewer acres than are represented by the present fertilizer-land use ratio."

These two economists point out that increased fertilizer use has played a major part in meeting production needs and lowering unit costs of production.

"Most farmers who have adequate resources can improve their incomes substantially through higher rates of fertilizer application," Mr. Ibach and Mr. Lindberg report.

"Farmers can do this because: 1—The cost of fertilizer is low relative to the cost of most other inputs; 2—The return from an additional dollar spent for fertilizer at present rates of application on most crops, amounts to more than a dollar and more than the return obtained from many other inputs."

Prizes for Display

CHICAGO—Free gifts and $1,250 in cash prizes are available to all garden dealers who display Chlordane insecticide by Sept. 1, according to the Velsicol Chemical Corp., sponsor of the contest. The gifts will be given to every dealer who displays five or more cases of Chlordane insecticide, regardless of brand, with Chlordane literature and a Chlordane banner, for two consecutive weeks prior to Sept. 30, the company says.

To get his free gift, the dealer simply mails a snapshot of his display, with his gift order card, to Velsicol, 330 E. Grand Ave., Chicago 11, Ill.

Ohio Experimenter Emphasizes Importance Of Continued Chemical Insect Controls

COLUMBUS, OHIO — Although other methods of controlling insects are appearing on the scientific horizon, the use of agricultural chemicals is absolutely essential to maintain our present high standard of living, an Ohio Agricultural Experiment Station official declares.

Dr. C. R. Neiswander, associate chairman of the department of entomology, says, "It is likely that the use of insecticides will continue at perhaps even an expanded rate for years to come. For many of the common insect species, such as the codling moth, the potato flea beetle and the various species of aphids, there is no other solution in sight.

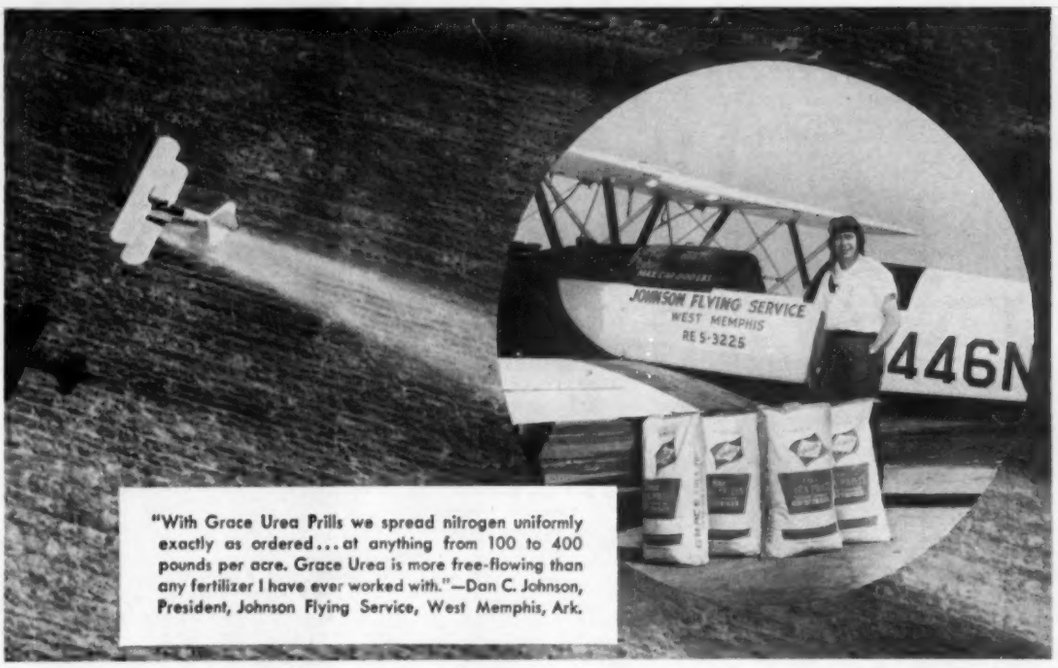
"If the use of insecticides and fungicides were prohibited, many of our common foods such as peaches, apples and potatoes would go off the market or the supply would be so small that only a few could afford them."

Too many people feel that insecticides are put on the market haphazardly and without knowledge of their hazards to humans. This is untrue, says Dr. Neiswander since a great amount of work and study goes into any insecticidal material before it is approved for use on food crops. Label approval must be given and tolerances established if deleterious residues occur. As much as $1,000,000 may be spent to get the information required before a single insecticide can be placed on the market for use on products in interstate commerce, it is reported.

"When label approval for a product has once been issued and the material is in use, the consuming public should have complete confidence in the safety of the product, providing the label instructions have been followed. In the case of the cranberry episode, some growers did not follow the directions although the material, amino triazole, would have been safe if it had been used as recommended," he states.

Dr. Neiswander says there are hazards in the use of insecticides just as there are hazards in using the automobile or kitchen range. People can learn to live with each of these safely if they follow simple rules of precaution.

"The vegetables and fruits on today's market shelves are not only the most abundant and of the highest quality but also the safest they have ever been," concludes Dr. Neiswander. He stated he knew of no case where people became sick from eating insecticide-treated vegetables or fruits.



"With Grace Urea Prills we spread nitrogen uniformly exactly as ordered... at anything from 100 to 400 pounds per acre. Grace Urea is more free-flowing than any fertilizer I have ever worked with."—Dan C. Johnson, President, Johnson Flying Service, West Memphis, Ark.

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Aerial Application of

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on wheat, oats, milo maize, pasture

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Other advantages of aerial application are: Stands are not injured and the soil is not compacted. Fertilizer can be applied at any time... even when moisture is in the ground. And, because Grace Urea Prills is 45% nitrogen, there are less bags to handle and fewer plane loads to cover a given area.

But whether it is applied "up-in-the-air" or "down-to-earth," your customers will find it pays to use the fertilizer that contains more nitrogen per pound than any other solid fertilizer—Grace Urea Prills.

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OSCAR & PAT

By AL P. NELSON

The tall, handsome man in grey sports shirt and slacks came sauntering into the Schoenfeld and McGillicuddy salesroom. He saw Tillie Mason, the bookkeeper, at her desk and also Oscar Schoenfeld within the railed enclosure that fenced in Oscar's desk and also Pat's.

The man moved toward the railing. "Is Pat in?" he asked in a brisk, clear voice.

Oscar turned around in his swivel to look at the man. "No, he iss not in!" he snapped. "He iss oudt somewhere, chasink aroundt."

"When will he be back?"

"I don't know. If he findts a farm weddink goink on, he won't be back until tomorrow."

"Hm," said the man. "Well, I'd like to leave this price quotation for him. Will you see that he gets it?"

"Price quotation!" Oscar bristled. "For what?"

The man looked at Oscar sharply, sizing him up. "Something Pat asked me to figure on. Maybe I'd better keep it and deliver it to him in person."

"No, I'll take it," Oscar growled. "I'm a partner in this business. I want to know what's quoted on."

Reluctantly the tall man let Oscar take the folded piece of paper from his hand. "Gallagher Flying Service," Oscar read aloud. "Aerial photographing designated trade territory, and furnishing 24 by 36 in. maps of various sections—$475."

"Gallagher!" Oscar said sharply, lingering on the pronunciation of the name, "there iss some mistake. We are in the fertilizer business, not airplanes."

Gallagher looked irritated. "You don't understand," he said. "Pat wants to get aerial photographs of the trade territory showing the location of every farm. Guess he wants to use these photos in selling fertilizer."

"Ach, Himmel!" Oscar slapped his hand to his balding head. "I haf always said Pat is up in the air all the time. Now I know it. Take your quotation. We don't want it."

Gallagher flushed. "Say, I was asked to furnish this quotation by Pat. I put in a lot of time figuring it out, and the least you fellows can do is talk it over. I made a special price considering the work could be done now in late summer. Other times of the year it might cost another $250."

"We don't want it at any price," Oscar said. "Take it. Take it. We don't want nottink like that. Aerial photos to sell fertilizer. Phooey."

Angrily, the man took the quotation and turned on his heel. At the door he met Pat McGillicuddy.

"Hi, Mike," he said, "where are you going in such a hurry?"

"I'm gettin' out of here," barked the aviator. "You told me to figure a price on aerial photography and that partner of yours just shoved it back at me. Practically told me to push it into my propellor!"

Pat cast a quick look at Oscar. "Come on outside, Mike, and let me talk to you about this. I can explain everything."

Ten minutes later Pat came back into the farm store salesroom and headed for his desk. In his hand was the quotation for aerial photographs.

"Now you listen to me, Oscar," he said. "When I ask for something from somebody, you can at least be courteous enough to see that what I ask for gets to me. And you can treat those people civilly."

"I own haf the business," Oscar thundered. "And if something is foolish I say 'raus mit em'."

Pat sighed. "You don't understand, Oscar. You spout off before you get the facts. Did you know that a fertilizer dealer in Fayette, Mo., is going to town selling fertilizer, just because he has had an aerial survey of his trade area and uses it in his sales promotion program?"

"Does he collect for what he sells?" snapped Oscar.

"Well, I suppose so," Pat said. "A salesman told me about this fellow. He has aerial photos of every farm in the area, all numbered with identification tags. Then this dealer sits down with the farmer, shows him how his farm looks from the air."

Oscar only snorted, but said nothing.

"He asks the farmer what he has in each field. He numbers each field. Then the dealer offers to take soil tests of each field free of charge. The farmer pays the sampling test charge, though. On the basis of the soil test, the dealer makes out a sales quotation on the fertilizer needed for each field. He keeps a carbon copy of the quotation."

"Ach, what goot does that do?"

"Well, when the farmer wants fertilizer, all he needs to do is drag out the quotation sheet and order what's on it, or simply tell the dealer to bring out fertilizer as specified."

"Too much work to sell fertilizer," Oscar said critically. "And the man may not pay."

Pat was a little irritated. "Oscar, they'll pay if they get good service. And this is service. Farmers like orderly and scientific programming. This aerial photo idea is a dandy. For $475, plus my own time taking soil samples, we can do something for customers no other dealers in the area are now doing. We'll get the jump on them."

"Ach, with a small 15% margin on fertilizer, you haf to sell lots of tons and collect for them to pay for the photographs," Oscar said.

"But it's worth it," Pat said. "Farmers will be inclined to order enough fertilizer as specified. We'll sell more fertilizer. And I can get a little gadget which will help me measure quite exactly on those photos how much each field is in acres."

"McGillicuddy, if you go oudt and collect andt bring in all accounts down to a 30 day basis, I will maybe go along with you on this crazy promotion idea. But not otherwise."

Pat gasped. "But that means I've got to collect or settle with every delinquent account."

Oscar nodded. "Ach, yes, that comes first. At meetinks don't they always settle oldt business before they ask for new business? Take it or leave it, Irisher."

Ohio Experimenters Develop Lime Test

COLUMBUS, OHIO — A new soil test developed by the Ohio Agricultural Experiment Station tells more accurately how much lime must be added to soil to reduce acidity. The test is especially valuable for use when the soil contains large amounts of soluble aluminum. In such cases, the old test indicates that less lime is needed to raise the pH than is actually true. Consequently, the acidity may not be reduced enough to provide optimum conditions for a crop.

The new test, developed by H. E. Shoemaker, extension agronomist, and E. O. McLean, professor of agronomy, indicates more nearly the correct amount of lime regardless of the amount of soluble aluminum in the soil. It is now being used to make the soil testing service of the Ohio State University even more precise. As with old test, it is a rapid test based on the amount of change in pH of a given amount of buffer by a given amount of soil. The new test makes use of a more dilute buffer mixture and a combination of buffers which gives a more nearly linear relationship with both hydrogen and aluminum acidity through a greater range than did the old buffer.

Aluminum, which composes 8% of the earth's crust, is not a new problem in Ohio. But soil scientists did not appreciate fully the impact of high amounts of aluminum on crops until plant studies designed to improve the lime requirement test were conducted. And station agronomists have found that aluminum is more apt to be a problem element in eastern Ohio. Due to the naturally high acidity of the soil there, aluminum dissolves making it easy for plants to absorb it.

Weevil Sterilization Plan Considered in Texas

WACO, TEXAS — Because of the success in sterilizing male blow flies, the same procedure is being planned for the boll weevil. Research chemists at Texas A&M College are planning a similar campaign against this enemy of southern cotton farmers.

Sterile males will cause the females to lay infertile eggs to reduce the crop of baby weevils. If the system proves successful, it could mean millions of dollars saved every year.

Soft Rot in Corn Caused by River Water

MADISON, WIS.—Soft rot in corn, discovered in Wisconsin last summer, was caused by using overhead sprinklers to irrigate the crop with river water, Paul Hoppe, a University of Wisconsin pathologist, said.

Mr. Hoppe said he had isolated the bacteria which infected the corn plants in fields near Lone Rock. About 10% of the plants died shortly after being irrigated with water from the Wisconsin River.

Insecticide Registered

KANSAS CITY — Systox, a systemic insecticide, is now registered with the U.S. Department of Agriculture for control of aphids and mites on tomatoes and peaches, and for aphids on peas and celery.

Introduced in 1951 by Chemagro Corp., Systox has since been used to control aphids, mites and leafhoppers on vegetables, fruits, nuts, forage crops, and ornamentals.

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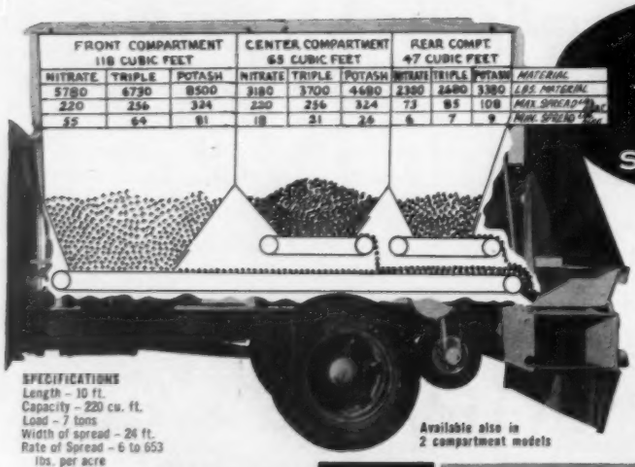
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Rate of Spread – 6 to 653 lbs. per acre

Available also in 2 compartment models

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FARM SERVICE DATA

EXTENSION SERVICE REPORTS

Extensive studies by the Utah Agricultural Experiment Station have shown that meadow yields in Utah can often be doubled by the application of commercial fertilizer.

Tests in Wasatch County showed yields were increased from less than two to nearly five tons per acre with the application of 150 lb. of available nitrogen and 80 lb. available phosphate per acre. The extra three tons of forage produced cost approximately $28 in fertilizer, the department reported.

The experiment station leveled a piece of land in Utah County in 1956 and applied 10 tons of manure plus 90 lb. of available phosphate per acre. The field was seeded in the spring of 1957 to a mixture of alfalfa, ladino clover, red clover, orchard grass, smooth brome and tall oatgrass.

Reed canarygrass was included in the mixture in one half the area. Barley was used as a nurse crop and the patch was grazed in the fall at the rate of 30 cow-days per acre.

Two years later 45 lb. of available phosphate were applied per acre. The meadow yielded 5⅓ tons of dry hay per acre. The yield of beef exceeded 1,000 lb. per acre.

Last year 70 lb. of available nitrogen was applied per acre in April. The same treatment was repeated in July. Dry hay and beef yields were equal to or slightly higher than in 1958. Irrigation practices were approximately those followed on well-managed farms. The meadows were irrigated at approximately 20-day intervals until near the end of the growing season when water shortages developed.

Experiment station scientists also reported that meadow hay yields were doubled in Summit County where anhydrous ammonia was applied.

The extensive studies showed that a high percentage of Utah meadow land is capable of producing two to four tons per acre.

★

Farmers of South Carolina often lose more than $40,000,000 per year to crop diseases, F. H. Smith, Clemson College extension plant disease specialist, says.

Much of this loss can often be prevented if growers will take advantage of all recommended plant disease prevention or control practices. Prevention of disease is the easiest and most inexpensive control.

Mr. Smith says that some growers tend to ignore plant disease losses, especially those that are not easily seen. The grower who expects to produce efficiently is one who cannot afford to ignore any losses to crop disease.

These are the basic practices which may be followed to prevent crop disease:

● Plant latest recommended varieties which have disease resistance. These varieties will not be resistant to all diseases, but usually will be resistant to one or more important diseases and partially resistant to some others.

● Follow crop rotations. This practice helps to prevent diseases from building up in the soil or on the refuse of any given crop.

● Plant only disease-free seed or transplants. Western-grown seed and certified seed are usually free of disease. Use seed treatment chemicals. Avoid buying noncertified transplants and transplants which come from restricted areas.

● Prepare firm seedbeds and apply adequate fertilizer to get plants off to a healthy start.

● Control insects and weeds and when disease becomes a problem, the use of fungicides—properly and timely applied—should help in control.

★

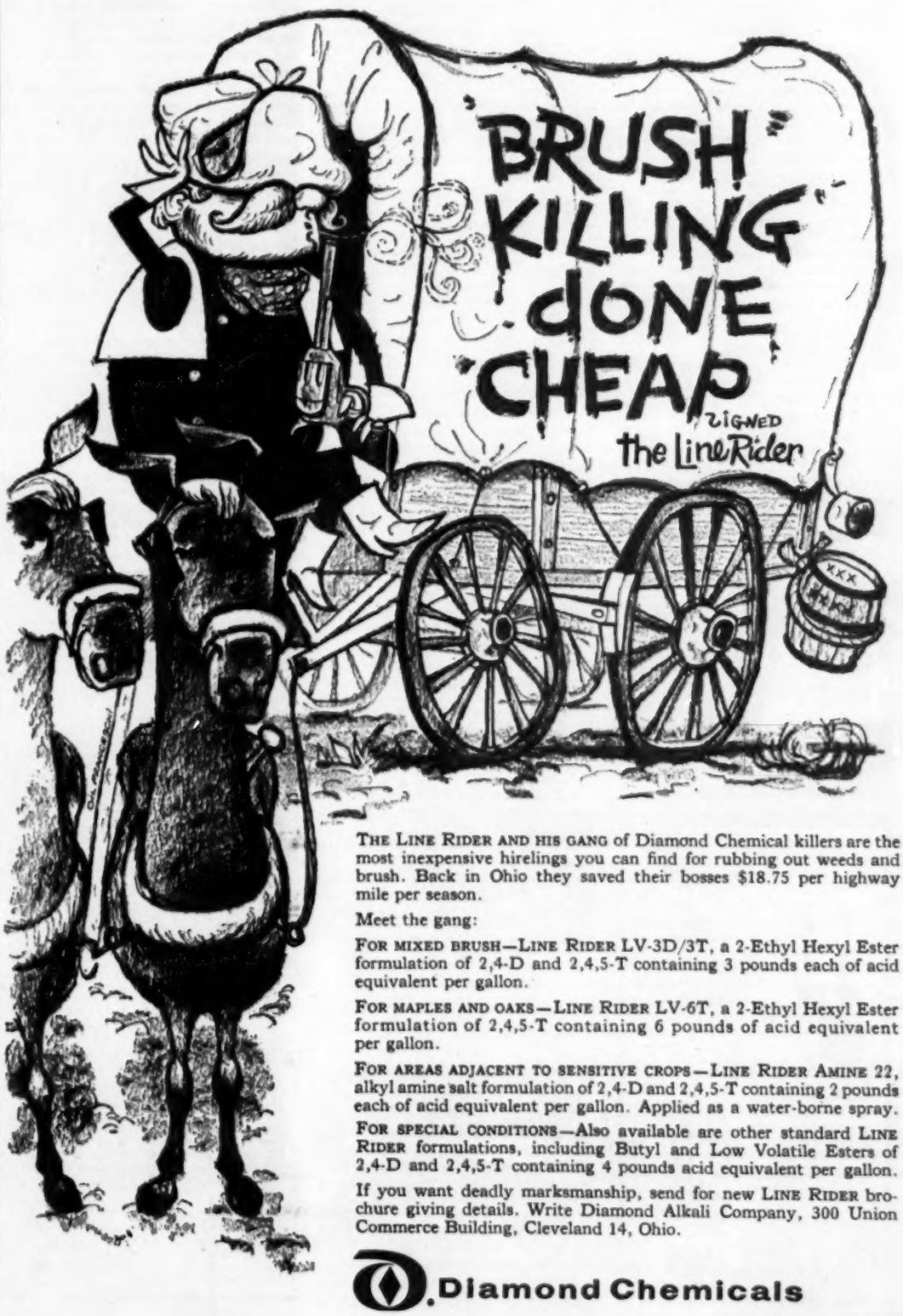
Farmers who fertilize corn with nitrogen need have little worry that this practice will delay the maturity of their corn, recent test trials indicate.

In fact, on soils deficient in available nitrogen, nitrogen fertilized corn was slightly drier at harvest time in most trials than corn receiving no nitrogen, it was found. Nine trials were conducted by the North Dakota Agricultural College Experiment Station during the past three years on farmers' fields in southeast North Dakota. Varying rates of nitrogen fertilizer, from 0 to 80 lb., were used. All plots were well fertilized with phosphorus.

While the higher nitrogen rates did not always give profitable returns, they certainly did not delay maturity. The time of application had no effect on moisture content of ear corn. Corn side-dressed with nitrogen was not as dry as that which received its nitrogen prior to seeding, but it was as dry or drier than corn not fertilized with nitrogen.

Scientists who conducted the trials say, "The decision to use high rates of nitrogen fertilizer on corn should be based on expected yield increases and value of the increased product in relation to cost. One should not hold back for fear of delayed maturity, provided they also use adequate phosphorus fertilizer."

In one trial, the nitrogen fertilized corn appeared greener just prior to frost, but careful observation showed that this was mostly because the leaves in the nitrogen-treated plots still retained their green coloration while leaves on untreated plots were dry and in some cases had shattered. The husks and ears appeared as mature as those on check plots.



THE LINE RIDER AND HIS GANG of Diamond Chemical killers are the most inexpensive hirelings you can find for rubbing out weeds and brush. Back in Ohio they saved their bosses $18.75 per highway mile per season.

Meet the gang:

FOR MIXED BRUSH—LINE RIDER LV-3D/3T, a 2-Ethyl Hexyl Ester formulation of 2,4-D and 2,4,5-T containing 3 pounds each of acid equivalent per gallon.

FOR MAPLES AND OAKS—LINE RIDER LV-6T, a 2-Ethyl Hexyl Ester formulation of 2,4,5-T containing 6 pounds of acid equivalent per gallon.

FOR AREAS ADJACENT TO SENSITIVE CROPS—LINE RIDER AMINE 22, alkyl amine salt formulation of 2,4-D and 2,4,5-T containing 2 pounds each of acid equivalent per gallon. Applied as a water-borne spray.

FOR SPECIAL CONDITIONS—Also available are other standard LINE RIDER formulations, including Butyl and Low Volatile Esters of 2,4-D and 2,4,5-T containing 4 pounds acid equivalent per gallon.

If you want deadly marksmanship, send for new LINE RIDER brochure giving details. Write Diamond Alkali Company, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals

How to Set Up a Fertilizer Demonstration for Corn

By E. J. WILLIAMSON
and
LLOYD DAVIS
Extension Soils Specialists
South Dakota State College

A DEMONSTRATION on the capabilities and use of any product is one of the best ways of obtaining consumer acceptance. The evaluation of commercial fertilizer by the use of visual response field demonstrations is no exception. In fact, it is the tool of which a dealer should take full advantage.

It is the intent of this article to provide dealers with information on the steps involved in laying out fertilizer demonstrations, including the application of fertilizer to the end result, that of taking yield results.

Working with the county extension agent can greatly improve the effectiveness of fertilizer demonstrations by the added contact which the agent has in the farming community. His assistance can be in the form of news stories, radio releases, pictures and tours, as well as technical help and cooperative efforts in the layout of the demonstration.

Material and equipment needed for this demonstration include: Straight goods sources of nitrogen and phosphate; broadcast fertilizer spreader, preferably 12-14 ft. width, and tape, stakes and laths.

Considerations

You should select a site which has not been fertilized, and preferably one which has not had legumes or manure plowed under for the past three years.

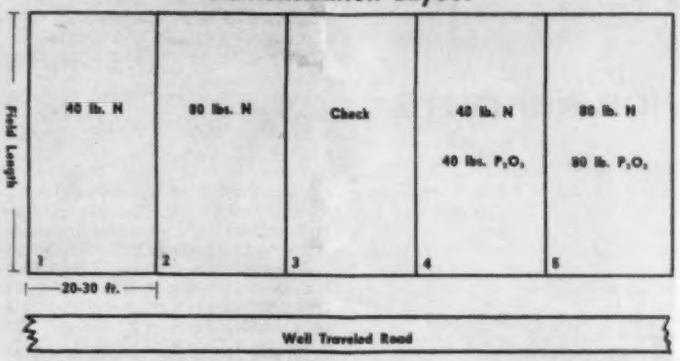
Prior to the fertilizer application, take a soil sample of the area, and submit to the soil testing laboratory.

The fertilizer applications should be plowed under if at all possible.

Layout Procedure

1. Select an area along a well traveled highway.
2. Measure off treatment strips and mark by placing lath in fence. Remeasure after corn is up, and place stakes in end hills of area which lie within treatment.
3. Publicize the demonstration by road-side signs, news articles, radio and tours.
4. Secure color slides of the visual responses noted during the growing season.

Demonstration Layout



NOTE: Adjust fertilizer spreader to deliver fertilizer at a rate equivalent to 40 lb./acre of elemental nitrogen or P_2O_5; then rerun over plots 2 and 5 to obtain the 80 lb./acre rate of nitrogen; and likewise, for plot 5 for the 80 lb./acre rate of P_2O_5.

Transforming Nutrient Rates into Fertilizer Weights

Calculations given in the examples below establish the basic guide lines by which most fertilizer poundage calculations can be made:

For Acres

To determine the poundage of any source needed to meet the nutrient requirement per acre, use the following formula:

$$\frac{\text{(Pounds of nutrient wanted)}}{\text{(Percent nutrient in source)}} = \text{Pounds of source needed per acre}$$

Example: Eighty pounds of N-P-K are wanted per acre. These poundages are to be supplied by Urea (45-0-0), Calcium Metaphosphate (0-62-0) and Potassium Chloride (0-0-60).

80 ÷ .45 = 178 lb. of 45-0-0 needed per acre
80 ÷ .62 = 129 lb. of 0-62-0 needed per acre
80 ÷ .60 = 133 lb. of 0-0-60 needed per acre

Calibrating a Broadcast Fertilizer Spreader

The equipment needed includes:

A section of canvas or some strong, tightly woven cloth, 2½ or 3 ft. wide and long enough to extend the full width of the spreader; a milk scale that is graduated and calibrated to weigh material to 0.1 lb.; a pail in which fertilizer can be weighed; a 100 or 200 ft. steel tape, and two laths.

Procedure to follow includes:

1. Tape off and stake a distance of from 25 to 50 ft.
2. Attach canvas or cloth below hopper openings in such a way as to form a loop in which to catch the fertilizer. If two or three men are available, they can ride the spreader and hold the looped canvas under the openings.
3. Pull the spreader through the taped distance.
4. Pour the fertilizer obtained into the pail. Weigh. Remember to subtract the weight of the pail.
5. Measure the width of the fertilizer hopper.
6. Basic formula for calculating how many pounds of fertilizer are being delivered per acre is as follows:

$$\frac{\text{(Pounds of fertilizer delivered)} \times \text{(Number of sq. ft. per acre)}}{\text{(Distance traveled)} \times \text{(Width of spreader)}} = \text{weight being delivered per acre}$$

If, for example, 3 lb. of fertilizer were delivered by a 10-ft. spreader in 30 ft., we would have—

$$\frac{(3) \times (43{,}560)}{(30) \times (10)} = \frac{130{,}680}{300} = 435.6 \text{ lb. of fertilizer per acre}$$

7. Adjust control levels and repeat the above procedure until you obtain the weights desired. (See "Transforming Nutrient Rates into Fertilizer Weights" for inmoration on how to arrive at weights desired.)

Harvesting and Calculating Corn Yields

For checked or power checked corn, harvest at least 20 hills for each treatment of the demonstration. These 20 hills can be two rows of 10 hills each or four rows of five hills each depending on the variability of the strip. Avoid border effects by always picking only the center rows of the strips or plots.

Harvest a uniform stand in terms of hills. If a complete hill is missing in the row you are picking, pick the corn from the opposite hill in the next row. This procedure is valid only when treatment does not affect stand. This is generally the case in fertilizer demonstrations with corn.

For drilled corn, an equivalent 20 hill sample is also necessary for each separate treatment. If the rows are 40 in. apart, consider the equivalent hills to be 40 in. apart. Twenty hills in one row would then be (20 x 3½ ft. = 66⅔ ft.) or one row that needs to be harvested. Since it is better to harvest two shorter rows equaling this distance dividing 66⅔ by 2 equals 2 rows 33⅓ ft. or 33 ft. 4 in. long that need to be harvested.

Moisture samples and calculations: Take a moisture sample from 20 to 30 ears picked at random from the corn harvested for each treatment. Do this by running a screwdriver lengthwise down two rows of kernels while holding the butt of the ear in a pail. Put the shelled corn in pint fruit jars and seal lightly with cap. Do not use jar rubbers to make a tight seal if the moisture reading is not to be taken for a day or two because fermentation may begin to take place if jar becomes warm. Moisture readings should be made soon after harvesting, and so this precaution should not generally be necessary.

The formula to use in figuring yields is as follows:

$$\frac{\text{(Field weight of ear corn)} \times \text{(No. of hills per acre)}}{\text{(Lbs. ear corn in Col. B of Table)} \times \text{(No. of hills harvested)}} = \text{Yield in bu./A of shelled corn 15.5% moisture}$$

The number of hills per acre for a number of different spacings is given below:

Hills Per Acre

3'0" x 3'0"—4840	3'0" x 3'2"—4585
3'2" x 3'2"—4344	3'2" x 3'4"—4127
3'4" x 3'4"—3734	3'4" x 3'4"—3920
3'0" x 3'4"—4356	3'2" x 3'6"—3930
3'6" x 3'6"—3556	3'8" x 3'9"—3240

The formula for finding the number of hills per acre for any spacing is as follows:

$$\frac{\text{(Sq. ft. per acre)}}{\text{(Average distance between hills in ft.)} \times \text{(Width of rows in ft.)}} = \text{No. of hills per A}$$

Example hills 3 ft. x 3 ft. 6 in. $= \frac{43{,}560}{3' \times 3\frac{1}{2}'} =$ 4,149 hills per acre

Obtain the "pounds of ear corn" by taking that weight of corn given opposite the percent moisture which fits your harvested corn. For example, if you had harvested 36 lb. of 18% moisture corn from 20 hills on a 3 ft. 4 in. spacing you would have the following:

$$\frac{(30) \times (3920)}{(71.31) \times (20)} = \text{82.5 bu. per acre of shelled corn at 15.5% moisture}$$

Field Procedure

1. Before picking corn, mark areas to be picked by placing a burlap bag at the end hills of the area to be picked.
2. Pick corn into a metal or regular bushel basket. Pick toward the bag which was placed at the edge of the area to be picked. Pour corn into bag.
3. List on a tag the treatment and the number of the area within the treatment strip which the corn represents. Place the tag in the bag.
4. Bags of corn can now be carried out of the field and taken to a central location for weighing. Record weight on tag as well as on the record.
5. Place tag into glass jar into which moisture sample will be placed. Check moisture at an elevator and record on tag.
6. Transfer information on tag to permanent record which has been drawn up on the basis of plot locations within treatment strips.

Weight of Ear Corn at Various Moisture Contents to Yield 56 Pounds of Shelled Corn at 15.5% Moisture*

Percent moisture in grain at harvest	Field Weight—lb. of ear corn to yield 56 lb. shelled corn containing 15.5% moisture COLUMN B	Percent moisture in grain at harvest	Field weight—lb. of ear corn to yld. 56 lb. shelled corn containing 15.5% moisture COLUMN B
10	63.49	27.5	84.90
10.5	63.86	28	85.62
11	64.25	28.5	86.32
11.5	64.65	29	87.04
12	65.06	29.5	87.76
12.5	65.50	30	88.50
13	65.95	30.5	89.22
13.5	66.42	31	89.94
14	66.89	31.5	90.67
14.5	67.39	32	91.43
15	67.89	32.5	92.13
15.5	68.40	33	92.85
16	68.94	33.5	93.55
16.5	69.51	34	94.28
17	70.90	34.5	94.98
17.5	70.69	35	95.71
18	71.31	35.5	96.43
18.5	71.95	36	97.17
19	72.60	36.5	97.90
19.5	73.27	37	98.64
20	73.96	37.5	99.38
20.5	74.60	38	100.13
21	75.36	38.5	100.87
21.5	76.07	39	101.63
22	76.79	39.5	102.39
22.5	77.53	40	103.16
23	78.25	40.5	103.92
23.5	79.01	41	104.68
24	79.76	41.5	105.45
24.5	80.50	42	106.22
25	81.25	42.5	106.99
25.5	82.03	43	107.76
26	82.82	43.5	108.53
26.5	83.50	44	109.31
27	84.19	44.5	110.09
		45	110.88
		45.5	111.68

*For percentages not listed, interpolate as follows: If moisture was 10.2 percent subtract (63.86—63.49=.37) and (10.5—10.0=.5) or simply 5 units. Then .37 ÷ 5 = 0.074. Subtract (10.2—10.0=.2) or 2 units. Then (0.074) (2) = 0.148 =0.15. Add 0.15 to 63.49 = 63.64 pounds for 10.2 percent moisture corn.

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Promotion, Employee Training, Expense Control Programs Help Missouri Company

By AL P. NELSON

Promotion, employee training and expense control programs affecting feeds and other farm supplies, are helping Murray Renick, Rolla Feed Mill, Rolla, Mo., achieve an impressive net profit.

Cost conscious Mr. Renick knows the turnover rate of the eight departments in his prosperous business. For example, his fertilizer turnover rate is 4.4 times. His gross profit on fertilizer is 11.4%, and the gross profit per dollar of inventory on fertilizer is .93%.

Gross profit rate of all the firm's business is 18.2% of sales. Mr. Renick has figured out the turnover rate of every product he sells, and the gross profit.

"By measuring turnover of inventory we know where we stand," says Mr. Renick. "We can then see which line needs developing and sometimes whether a line should be discontinued. This measuring program really shapes our store and mill policies."

This firm does a large volume in farm, garden and lawn fertilizer, spray materials and sprayers. One reason is that Mr. Renick has an over-all profit incentive plan in which all 15 employees share. This incentive is 1% on all sales over the previous year's total, tied in with the labor expense. On some items that carry over 15% gross profit, a higher commission is allowed for outside salesmen.

Naturally such a system tends to make every employee a salesman instead of an order taker. There is a direct relationship between a man's salary and what he sells. This spirit of selling is very evident in the work of the firm's outside salesmen and also in the mill and in store sales staff.

For example, the two men in the grind and mix department get an extra commission of 2½¢ a bag on all concentrates put through the mill. This plan has resulted in a high grind and mix output and higher concentrate sales.

Mr. Renick's employee meetings also help to install a greater spirit of selling, cooperation and loyalty among employees. These meetings are usually held once a month at which time mill, office, field selling, display, collection and other problems are discussed. Such meetings, states Mr. Renick, help to make employees familiar with the problems of all departments as well as with their own.

"These sales meetings help us to keep on our toes, dream up new and better sales and display ideas," he said. "They also focus attention upon the important matter of costs. We explain departmental costs to employees so that they know what it costs us to operate a truck per mile, and so on."

At a recent meeting, Mr. Renick asked his employees to turn in 10 suggestions for making his business more profitable. One employee turned in a suggestion that the firm discontinue some poultry integration projects which had experienced some difficulties. After looking deeply into the problem, Mr. Renick decided the employee was right and terminated the integrated experiments.

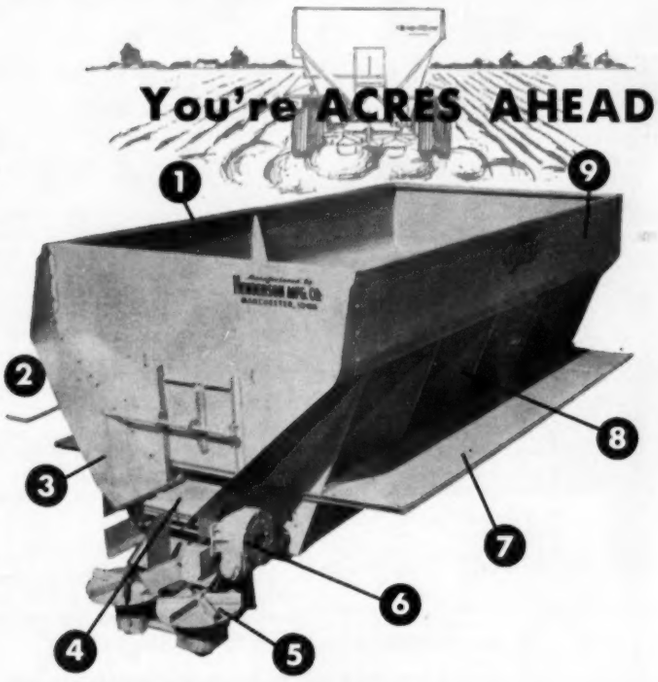
In his radio and newspaper advertising, Mr. Renick constantly calls attention to the fact that soil testing and the application of the recommended amounts of fertilizer are the sound way to farm for maximum profits. Such educational work has resulted in many farmers looking ahead and having soils tested well in advance of the planting season, and also committing themselves for specific amounts of fertilizer.

Soil samples are collected at the Rolla store and forwarded to the state agriculture department lab for testing.

This company has some very fine farm supply displays in a 30 by 40 ft. store. Seasonally, four large islands,

AN EMPLOYEE (left) of the Rolla Feed Mill, Rolla, Mo., sells a sprayer to a gardener. Note the island display of insecticides in the background. The firm has two islands with farm chemicals and allied displays. Two additional islands carry other farm items. Each island is 4 by 6 ft. and each cost $65 to construct.

You're ACRES AHEAD with a NEW CHIEF LIME AND FERTILIZER SPREADER



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The F-200 STRAIGHT LIMESTONE,
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Yes, you're acres ahead. You get greater capacity with 6" higher sides . . . an extra 1½ yards of payload. Twin fan assembly assures uniform spreading up to 100 feet with wide spread attachment. No more skip spreading and fewer trips through the field save time . . . when time means money.

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1. Reinforced top edge of 1" steel pipe all around.
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8. Formed channel gussets for ruggedness, long life.
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4 ft. by 6 ft. are devoted to a showing of insecticides, pesticides and spray chemicals so that farmers and gardeners can be given the correct information on how to handle specific spray problems.

"This training helps make more sales," Mr. Renick states. "Many customers say that our sales staff knows the answer to most spraying problems, and that they rely on the advice of our employees. This is a trust we want to continue to merit."

Nowdays many trees need spraying for insects, especially elms; so Mr. Renick bought a small spray outfit mounted on wheels which is kept busy on tree spraying jobs in that area. Operated by Roger Lamberth, a young man trained in spraying by Mr. Renick, the spray outfit brings in over $100 gross a day.

The trailer outfit cost about $450. It is equipped with a pressure pump which enables Mr. Lamberth to spray trees 20 to 25 ft. high with insecticides. Charges for tree spraying range from $1 to $3, depending on the height.

This spray outfit is also used for building-termite spraying. Mr. Renick advertises the service in newspaper ads and also in his daily radio program over a local station. Satisfied customers also tell their friends about the service. Seasonally, too, the small spray rig is used for spraying weeds in gardens, lawns, and weeds in fence rows on small acreage farms.

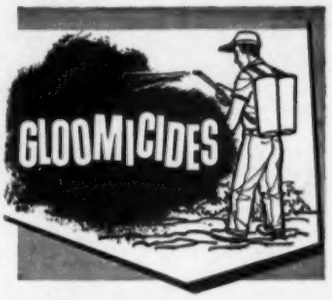
Items stocked in the farm store include bagged fertilizer for gardens and lawns, peat moss, dairy utensils, field seeds, corn seed, bulk and package vegetables, poultry and livestock remedies, dog food and other items. Electric fence controllers and leather cattle club equipment are also sold.

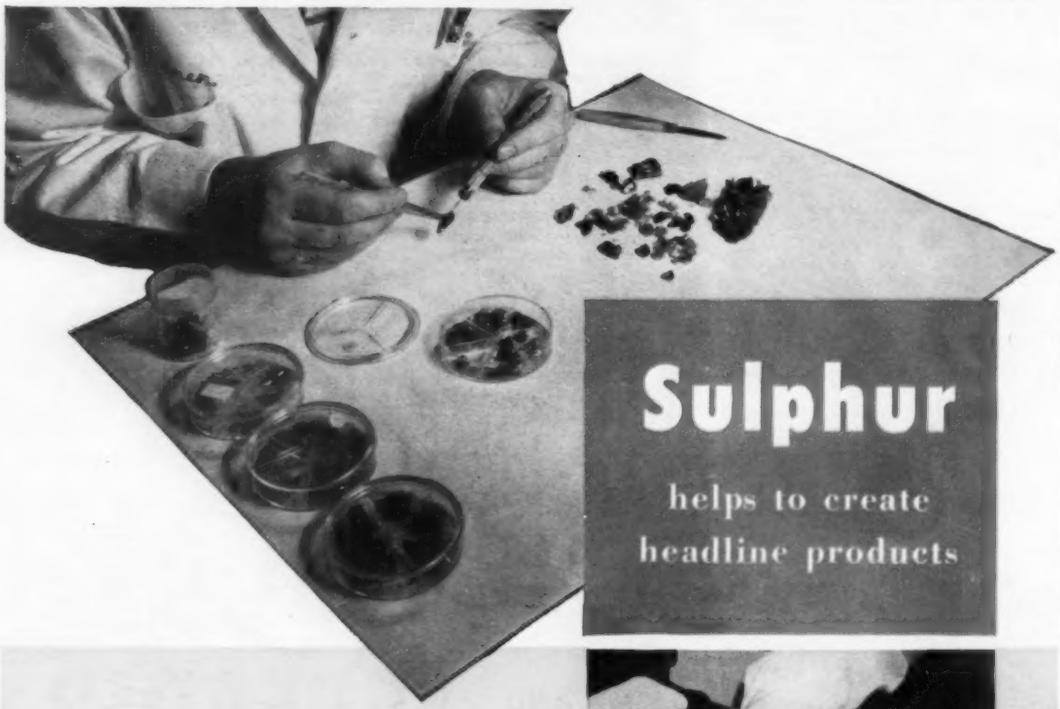
Farmers like to inspect photos of fertilized crops and other farm operations on a bulletin board. This firm's display of such material contains more than 50 identified photos. Mr. Renick owns a Polaroid camera and his staff and he snap many customer, herd, flock and crop pictures during the year. Such pictures are often posted on the store bulletin board, and some pictures are given to customers.

On a daily 15 minute radio program at 12:15 noon, Mr. Renick conducts farm interviews and also tells listeners about the importance of soil testing and proper fertilization. Seasonally, too, he talks about garden and farm spraying and the importance of using the right chemicals in the right amounts. He advises listeners to come to the Rolla Feed Mill to talk about their fertilizer and spray problems.

"Radio, newspaper and direct mail advertising pay off for us," declares Mr. Renick. "We want customers to know of the products and services they can get from us. Advertising helps us get this message to our entire trade area. We also talk about new products so that listeners can keep up with developments in farming."

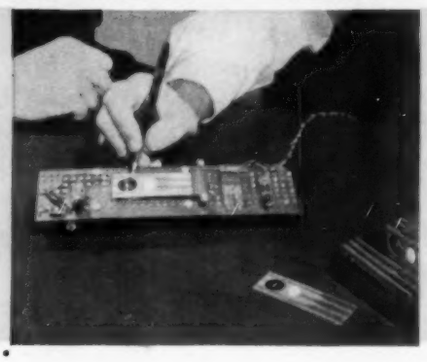
This hard-hitting, varied sales promotion and educational program is bringing dividends to the Rolla Feed store in sizable annual increases in the volume of business.





Sulphur

helps to create headline products



CdS • • • *a new concept in field-effect transistor design*

General Motors Research Laboratories has recently announced the application of a new transistor material . . . the cadmium sulphide crystal which offers several distinctive values over the single type atomic material. Its outstanding characteristic is that it is controllably sensitive to and affected by light and other radiations.

CdS provides another interesting development where Sulphur is importantly in the picture . . . a development that may have far-reaching effects in the broad field of electronics.

Sulphur and its many derivatives, either directly or indirectly, have a part in the creation of countless products, adding to the strength of our economy. Our business is to produce Sulphur—molten as well as solid—and have it available in sufficient tonnages at several departure points to serve any plant in the United States or Canada. Supplementing this basic policy, we are developing centralized distribution centers for quicker service.

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Sign on an isolated little gas station at the edge of the desert: "Don't ask us for information. If we knew anything, we wouldn't be here."

●

"How old did you say you were?" asked the doctor of his female patient.

"I never mention my age," replied the patient, "but as a matter of fact, I've just reached twenty-one."

"Indeed," said the doctor. "What detained you?"

●

Little Johnny awoke his mother at 2 a.m. demanding to hear a story.

"Sh-h," she said, "just wait a little while until your father gets in and you can hear the story that he tells me."

●

Girl: "You play beautifully. Why did you take up the piano?"

Pianist: "My beer kept falling off my violin."

●

McTavish: "I hear you're a great believer in free speech."

McSkene: "Aye, that I am."

McTavish: "Then, you'll not mind if I use your phone."

●

Running to catch a bus, a saintly old fellow seemed just about to make it. With a smirk, the bus driver pulled off and a wheel splashed a shower of muddy water over the old man.

With a sigh, this kindly one was heard to murmur, "May his soul rest in peace," then added, "and the sooner the better."

●

Mistress: "When you wait on my guests tonight, be careful not to spill anything."

Maid: "Don't worry, Ma'am, I won't say a word."

●

The popularity of the automatic dishwasher is due to the fact most husbands would rather buy one than be one.

●

Aunt Nellie: "Well, Bobby, did you see Santa Claus last Christmas?"

Bobby: "No, auntie. It was too dark to see him, but I heard what he said when he knocked his toe against the bedpost."

●

"Number, phooey," yelled the drunk into the pay phone. "I want my peanuts!"

●

The indignant minister looked hard at one of his parishioners.

"I heard you went to a ball game Sunday instead of coming to church."

"That's a lie," the parishioner cried. "And I have the fish to prove it."

Additional Chemical Facilities Scheduled For 1961 in Manitoba, Announcement Says

By Quincy Martinson
Special Croplife Correspondent

WINNIPEG, MAN., CANADA—On the heels of the July 19 opening of a million-dollar sulfuric acid plant—Manitoba's first basic chemical industry — comes the announcement that two other related chemical plants will be in operation within a year and a half.

This will mean, said Mark G. Smerchanski, president of Border Chemical Co., Ltd., that his firm alone will establish a new industrial chemical complex in the province, based on the presence of the new sulfuric acid plant.

Border Chemical's sulfuric acid plant, in Springfield municipality just outside Transcona town limits, is the first such industry between Sudbury, Ont., and Fort Saskatchewan, Alberta. It was formally opened jointly by Hon. Gurney Evans, minister of industry and commerce for Manitoba, and Reeve Stephen Roscoe of Springfield municipality.

At the opening, Mr. Smerchanski stated another related chemical plant would be built and in operation by the end of 1960, and that a second would be started early in 1961 and in operation within the year.

The new 16-employee plant, now operating at 50 tons a day, has a 75-ton capacity. It can handle requirements for the mid-prairies, northwestern Ontario and part of the Northwestern states.

At present, the plant uses raw Alberta sulfur, but it is equipped to use copper-nickel sulphide concentrates from Manitoba's Bird River mining area. Mr. Smerchanski stated he will activate his new Manitoba Mining & Smelting Co. mine, using a work force of 200, to supply ore for the new industry.

Associated with the Winnipeg president are financial interests from Toronto, Pittsburgh and Philadelphia.

WHOOPS !

MISHAWAKA, IND.—Ward Fries, a farmer near here, looked out over his fields and let out a surprised yell. Indignantly, he stormed into town and promptly charged the city fathers $135 — for mowing down his 16-acre wheat crop. It seems the town's street department mistook his farm for a field of weeds and disposed of it in short order. The town paid.

Netherlands Plant to Use TVA's Process

ROTTERDAM, NETHERLANDS—A new compound fertilizer plant owned by Albatros Superphosphate Works was officially opened in Rotterdam recently. Annual production of the plant is expected to be from 80,000-90,000 tons. It will utilize the Tennessee Valley Authority continuous ammoniator in its manufacturing process.

The addition of this new plant will increase production at the Albatros plant by about 40%, a spokesman said.

INVITES FERTILIZER PLANT BIDS

WASHINGTON — Department of State for Agriculture, Government of Tunisia, invites bids before September 10 for the construction of a plant in Tunis to produce fertilizer from city refuse. It is to have an output of about 250 tons of organic fertilizer daily.

Interested firms should express their interest to "Monsieur l'Ingenieur du Genie Rural," Chief de l'Arrondissement Nord Secretariat d'Etat a l'Agriculture, 76 Boulevard Farhat Hached, Tunis, enclosing information on their technical and financial qualifications, brochures, etc., as well as data on processing method they propose to use, the announcement says.

Barrel Firm Begins $1 Million Expansion

WILMINGTON, DEL.—The Delaware Barrel & Drum Co. of Wilmington announced that it was entering into a $1 million expansion program to be completed by June, 1961. Delaware Barrel has recently purchased the former plant of the Pullman Co. in Wilmington, comprising 215,000 sq. ft. An additional five acres of ground for future expansion was also purchased.

The new program is designed to expand the production and warehousing of molded polyethylene drums and tanks of 5 to 500 gallons, inclusive, the company says.

On July 1, Delaware Barrel & Drum Co.'s sixth national sales office was opened in Los Angeles, Cal. The company currently has sales offices also in New York, Philadelphia, Chicago, Cleveland and Houston.

Phillips Plans New Ammonia Storage Tanks At Two Locations

BARTLESVILLE, OKLA.—Phillips Chemical Co., wholly owned subsidiary of Phillips Petroleum Co., is constructing four 15,000-ton-capacity ammonia storage tanks, refrigerated to hold storage temperature at approximately —30 (minus 30) degrees F. at atmospheric pressure on the tanks. Two will be located at Cactus ammonia plant operated by Phillips near Etter, Texas, and two at the company's East St. Louis, Ill., terminal on the Mississippi River.

These atmospheric pressure storage tanks will provide for more economical storage of anhydrous ammonia than conventional pressure tanks, the company says. They will enable Phillips to store large quantities of ammonia at key distribution points during the slack season in order to provide ammonia distributors with an adequate supply during the peak sales seasons. Large-scale application of ammonia fertilizer is requiring maximum production from the company's Gulf Coast and Texas Panhandle plants. Construction is expected to be completed in time to fill the new tanks prior to the next sales season.

SULFUR

(Continued from page 1)

ago. Imports from these two countries totaled 84,880 long tons in May, 1960; 79,694 tons in April, and 53,561 tons in March. Imports for May, 1959, were 64,101 tons.

Mexico contributed the greater tonnage by far. In May, imports from south of the border were 62,658 tons as compared to 2,356 tons from Canada.

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*PATENT PENDING

distributor inquiries welcome!

SPECIFICATIONS

Body Weight Approx.	1300 lbs.
Hopper Dimensions	60" x 84"
Wheel Track	74 inches
Axle Rating	4000# each axle
Type Axle	Tandem Torsion Spring
Fans	Angled Twin 19 in. Dia.
Wheel Bearing	Sealed Timkin Bearing
Capacity	2½ Ton
With Body Extension-19 in.	4 Ton
Spread Pattern	Approx. 45 Ft.
Spread Capacity Pr. Hr.	30-60 Acres
Field Speeds	
6 M.P.H.	30 Acres Pr. Hr.
12 M.P.H.	60 Acres Pr. Hr.
18 M.P.H.	90 Acres Pr. Hr.
Highway Speeds	up to 60 M.P.H.

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Full Speed Ahead . . .

1960's No Time for Slowdowns, Retreats nor Moratoriums Against Efficiency on the Farm

By Dr. Clifford M. Hardin*

University of Nebraska, President of
American Association of Land-Grant Colleges and State Universities

PROGRESS in American agriculture is a mutual interest of the plant food industry and the land-grant colleges of the country. Because of this common cause, these two groups have found it mutually beneficial to share ideas and to work together. It is important that this pleasant and profitable relationship should be continued.

We realize, of course, that our efforts are not the only ones which have enabled American agriculture to achieve its amazing record of increased productivity and efficiency, but certainly we have helped.

The agricultural extension service for example has done a great job of carrying progress to our American farms and ranches.

The county soil fertility program, in which the National Plant Food Institute has had much interest and which is now operating in almost 150 counties, is one of the many situations in which the county agent continues to be effective. The county soil fertility program is doing much to emphasize the importance of soil fertility as an essential element in cutting down production costs. It is a program which seems destined to grow and expand.

The ideal soil fertility program, of course, is one which considers all of the elements and factors which bear upon soil fertility. It considers conservation of soil fertility, as well as increased production.

There is still a long way to go in the whole area of sustaining and improving soil fertility. In my own State of Nebraska, for example, our College of Agriculture authorities agree that our farms could beneficially use 170 thousand tons of nitrogen a year. We are currently using about 117 thousand tons. Also, our farms could beneficially use four or five times more phosphates than are being applied currently.

The increased use of fertilizers, however, is but a part of the story. We need to know more about the chemistry of the soil so that nutrition for various plants can be brought to maximum efficiency, and we need to give more consideration to the application of fertilizers in relation to other factors, such as moisture, temperature, and cropping practices.

In agriculture we are always dealing with both the long- and short-range views. This points up the complexity of agriculture and the need for concurrent advancements on many fronts.

It was just about a hundred years ago now that the land-grant college movement came into being through the passage of the Morrill Act. This was a great step forward for American agriculture. It was the opening wedge, followed by the first Hatch Act in 1887 which gave impetus and solid form to research and experimentation by our colleges of agriculture. Then, in 1914, came the Smith-Lever Act which established the Agricultural Cooperative Extension Service to speed the transmission of new information and new ideas to the farm.

It should be noted, however, that the influence of the land-grant college movement reached beyond service to agriculture. It was also instrumental in bringing about the development of an entirely new concept of higher education. By adding new subject-matter areas to higher education, the land-grant movement gave thousands of young people, who otherwise would have had no interest in college, a reason for wanting to attend. Through its dedication to the extension of educational opportunity it made it possible for great numbers of young people to become acquainted with the basic knowledge of the arts and sciences as well as with specialized knowledge which pertains directly to their special interests in agriculture, business, and the professions.

In a very real sense, the land-grant movement brought the forces of higher education to bear on the development of America during the past century.

Throughout this period, and especially during the past 25 years in agriculture, an increasing variety of endeavors and occupations has been drawn into the production of food and fiber—if not directly, at least indirectly.

This increased diversity in all of the various steps involved in modern agricultural production is sometimes overlooked or underemphasized in some appraisals of the importance of agriculture to the welfare of American economic life.

Farm production no longer comes exclusively from the farm. It comes from the chemical laboratories, the petroleum and machinery industries, the transportation companies, the mills, the factories, the processors, the packagers, the accounting offices, and scores of service enterprises.

All of us who have the interest of agriculture at heart—and who have also the total economic welfare of this country in mind—have some missionary work to do in helping to put the importance of agriculture back into proper perspective.

We must go beyond simply counting the number of farms or the number of people who remain on farms. We must consider agriculture as a total industry, only a part of which exists on the farms of the nation. We must consider that:

- American farms annually release thousands of self-reliant, capable, and usually well-educated young people for service in other areas.
- That it is a great customer of American business and industry—the greatest single independent customer of the petroleum industry and one of the biggest of the electric power users.
- That many new and profitable enterprises, including the commercial fertilizer industry, have developed within the framework of the agricultural industry.
- That a tremendous processing and distributing organization is now a part of agriculture, and
- That agriculture continues to feed and help clothe the nation's millions, and to do that tremendous job with better products at proportionately reduced consumer prices.

Thus far the record of American agriculture has been essentially a story of outstanding success. In fact, some seem to feel it has been too much of a success story because we have surpluses of certain farm commodities. There have even been suggestions that it is time to slow down agricultural production by declaring a moratorium on some of our agricultural research activities.

I happen to be one who believes that such a policy of slowdown and stoppage would be most unwise. I believe that we must continue to strive to improve the efficiency of agricultural production—that the problems of agriculture will never be solved through less efficiency. Programs of education and research simply do not lend themselves to fits and starts and interruptions. Furthermore, I know of no society that has been able to advance itself by failing to take full advantage of opportunities to increase per capita productivity.

I do not believe our combined agricultural research and education program is the basic cause of our surplus problem. I am inclined to believe that the problem arises essentially through the nature of the farm enterprise itself.

For example, the full impact of the agricultural research and educational effort was not felt until the late 1930's. It was not until then that such important factors as hybrids, extensive irrigation, multiple power machinery, and chemical nutrients and controls came into wide use on the farm.

Yet many can recall the surplus problems of the 1920's and the public debates of such issues as the McNary-Haugen bill, the export debenture plan, and the Federal Farm Board. And most can remember the numerous control programs of the 1930's.

It is interesting and pertinent now, to conjecture what would have happened had we decided then to meet the problem of surpluses by choking off agricultural education and research—say in 1920 or in 1925 when the Purnell Act was passed, or in 1935 when the Bankhead-Jones Act came into being, or in 1939 or even in 1946.

Would such action at any of these times have solved the problem? Would we have held production down and thereby avoided surpluses, or would we have simply kept more people on the farm as has happened in other countries in an effort to produce enough food to feed the nation, but at a lower level of per capita productivity? I suggest that we would and that we would still have had surpluses because of the basic nature of the farm enterprise, and that our entire society would have a lower average level of living.

Furthermore, what of this nation's fate during World War II when there was a desperate need for more agricultural production, as well as for manpower in the armed forces and in the war-production factories? None of us chooses to anticipate war or any other form of disaster, but the fact remains that during the decade of the 1940's the American struggle for survival would have been even more difficult than it was if we had cut off agricultural education and research during the surplus crisis of the 1920's and 1930's.

I do not believe that America will ever solve any problem by deliberately promoting inefficiency or by trying to dam up and seal off the human desire to progress and to make life better. Quite to the contrary, we must redouble our efforts in education and research—and not only in the area of agriculture, but all along the line.

Surely we have learned that education is one of the main avenues leading to greater efficiency not only in agriculture but also in other pursuits. Moreover, it is perhaps the greatest single avenue toward progress in America's social, economic, and political development. The future of education becomes of paramount importance as we begin the decade of the 1960's looking to population growth, to new products, new industries, and to the opportunity—and challenge—for further social and political gains here at home and throughout the world.

The direction of education has be-

*From talk presented before 1960 convention of National Plant Food Institute, White Sulphur Springs, W. Va., June 12-15.

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STUBBLE DECOMPOSITION TESTS TRIED

ABILENE, TEXAS—Several field tests are being tried this year to find out if liquid nitrogen will help decompose small grain stubble. Four fields are used as test sites for applications of anhydrous ammonia, and the work is a cooperative effort of the Soil Conservation Service and the Callahan County Fertilizer Distribution Corp.

The object of the tests is to speed up decomposition of crop residues, according to Hugh Magers, work unit leader of the SCS, and it will also give the following crop an ample supply of humus and plant food.

The fertilizer company has also been trying liquid nitrogen on native and introduced grasses with good results. Heretofore, about the only crops receiving fertilizer have been cotton and peanuts.

come a topic of lively discussion throughout our country. Bound up in it is the issue of how increasing educational costs are to be met. This is an issue brought into sharp focus by the fact that an increasing proportion and an increasing number of our young people want to participate in higher education; by the growing shortage of qualified college teachers; by the outgrowth of educational facilities; by the demand for more post-graduate study and research—all factors which continue to push educational costs upward.

How this issue is eventually settled will greatly affect the future of higher education in America . . . and it will also greatly affect the future of America itself.

Much of our national strength and much of our success in maintaining our great experiment in democracy results from the fact that we have been able to extend educational opportunity to a substantial proportion of our people—certainly a greater proportion than other nations have been able to reach with their educational efforts. It would be a great loss if, in our concern with costs, we should do something that would limit the opportunity of our able young people for higher education.

It is important to remember that the individual who participates in higher education—the student who goes to college—is by no means the sole beneficiary. The national welfare and the national economy are also principal beneficiaries of our total educational effort.

This means that all who are interested in the further development of the national welfare and economy; in the future healthy growth of our fundamental pursuits, including agriculture; in the success of our leadership on the international scene and in the adequacy of our national defense, have a responsibility to help meet educational costs without impairment of educational opportunity.

I cannot believe that America can solve her educational problems by curtailing educational opportunity—this no more than we can solve her agricultural problems by curtailing the efficiency of production.

The development of resources, whether they be resources of the soil or of people, requires determination, effort, and activity.

This year of 1960 is no time for a slowdown; no time for pledges to retreat; no time for moratoriums.

It is, rather, a time to reactivate our American appetite for efficiency, our enthusiasm for opportunity, and our respect for the right of individual human beings to develop their talents to the utmost in the pursuit of American progress.

Such is the pledge that we should be making and such is the pledge that we can fulfill.

LAND CONVERSION

SACRAMENTO — Conversion of thousands of acres of sage brush lands to grasses is underway on a large scale in two northern California areas.

The largest project is underway in Sierra County where between 1,500 and 2,000 acres are being cleared of brush and seeded to grasses. Forest service lands in Siskiyou County also are being cleared. Five hundred acres of sage brush land were sprayed with 2,4-D this year and will be drilled to crested wheat grass this fall.

The Sierra Valley Soil Conservation District is sponsoring the larger project. Most efforts there center about production of wheatgrasses which are not destroyed by 2,4-D. Results so far indicate that seed production is profitable for about four years without fertilization or irrigation. It is believed that with proper care and fertilization that period could be extended considerably.

INDUSTRY PERSONNEL NEWS

Sales Staff Addition

DALLAS, TEXAS — Gordon W. Rogers has joined the sales staff of Southwestern Steel Container Co., announced Gordon D. Zuck, president.

Gordon W. Rogers

Mr. Rogers, who attended the University of Chicago, has for the past 11 years served in a sales capacity in this area in related lines. A native of Texas, he will maintain his headquarters at the plant's main office in Dallas, and will contact steel rail and drum users in the Southwest.

Southwestern Steel Container Co. is one of seven steel container manufacturing plants of Vulcan-Associated Container Companies, Inc.

●

Joins Clemson Staff

CLEMSON, S.C.—Dr. Ulysses S. Jones, Jr., chief agronomist since 1953 for the Olin Mathieson Chemical Corp.'s plant food division at North Little Rock, Ark., has arrived at Clemson College, to become head of the agronomy and soils department, School of Agriculture.

Dr. Jones succeeds Dr. Gilbert H. Collings, who retired July 1 after 42 years of service.

A native of Portsmouth, Va., Dr. Jones was graduated from Virginia Polytechnic Institute in 1939 with the B.S. degree in agronomy.

●

Named Sales Engineer

MINNEAPOLIS—Herbert E. Weyrauch has been appointed electronics sales engineer for Flo-Tronics Corp., Minneapolis, announced William P. Edmunds, president.

In this position, Mr. Weyrauch will have sales engineering responsibilities for Flo-Tronics' developments of systems for control of quantity measurement through solid state logic controls and transistorized control instruments and for magnetic control systems used in automation of mechanical conveyors, Mr. Edmunds said.

●

Spencer Executive Changes

KANSAS CITY — John C. Denton, president of Spencer Chemical Co., announced a "redeployment of key personnel" involving top executives of the company.

Mr. Denton announced the following new assignments: Frank Pyle, formerly vice president—plastics, has been named vice president and assistant to the president. Mr. Pyle will have responsibility for Spencer's foreign activities, commercial development for diversification and the nuclear fuels program.

Harold Dinges, formerly vice president—industrial chemicals, will become vice president—plastics with responsibility for plastics sales and sales-related activities. E. V. Friedrich, vice president—administration, will have the responsibility for overall direction of plastics division activities, including production and technical groups.

The company's industrial chemicals division will remain as a separate entity but will be under the direction of Byron Kern. Mr. Kern, who has been vice president — agricultural chemicals, will now have the title of vice president—agricultural and industrial chemicals.

●

Acting Supervisor

ST. LOUIS — John S. Sullivan of Indianapolis, Ind., has been named acting northeast area supervisor of agricultural chemicals sales for Monsanto Chemical Co.'s organic chemicals division, effective immediately.

John S. Sullivan

Mr. Sullivan formerly served as a sales representative with the division's district sales office here. He has relocated in Stamford, Conn., and will fill in for Charles A. Leonard, northeast area supervisor, who is on leave of absence due to illness.

Originally from St. Louis, Mr. Sullivan holds a BS degree in agricultural chemistry from the University of Arizona (1946). He joined Monsanto in 1951.

●

Appointed Controller

CHICAGO — Edward R. Mass has been appointed controller and office manager of the newly-formed industrial chemicals division of Stepan Chemical Co. He will be headquartered at Stepan's new administrative and research center at Northfield, Ill. Mr. Mass was formerly assistant to the treasurer for Stepan.

Edward R. Mass

Products of the Industrial Chemicals Division are manufactured at plants in Chicago, Millsdale, Ill. (near Joliet), and Maywood, N.J. The products include a complete line of surface-active agents and such basic materials as methyl esters, nonyl phenol and p-tertiary butyl phenol.

●

Assigned to Washington

MIDLAND, MICH. — Winfield W. Sunderland has been promoted to staff assistant in the agricultural chemicals department of the Dow Chemical Co. and assigned to the Washington office, announced J. W. Britton, manager of agricultural chemicals.

Mr. Sunderland will coordinate Dow agricultural chemical activities with the government regulatory agencies such as the U.S. Department of Agriculture and the Food & Drug Administration.

For the past six months, Mr. Sunderland has been on special assignment with the National Agricultural Chemicals Assn. in Washington.

●

Calspray Changes

RICHMOND, CAL. — Wade M. Choate, district manager for the California Spray-Chemical Corp. in San Jose, recently announced the transfer of Dr. Richard K. Kirsch from the Sacramento Valley area to the coast-

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al district having San Jose as headquarters. Formerly a research agronomist in Fresno, Dr. Kirsch will now be the district research agronomist in his new territory.

Dr. Robert T. Wallace, district manager for the Mid-Atlantic and New England states, recently announced the appointment of R. Alan Worrey, Jr., as a merchandising sales representative. Mr. Worrey was formerly a sales supervisor for Sealtest ice cream.

●

Bemis Appoints Two

A. B. Williams G. N. Roberts, Jr.

ST. LOUIS — Two sales appointments have been made by Bemis Bro. Bag Co. here, according to H. V. Howes, vice president and director of sales.

A. B. Williams, manager of sales for the western operations of Bemis in San Mateo, Cal., has been transferred to the St. Louis general sales department and G. N. Roberts, Jr., comptroller for western operations, has been appointed west coast representative for the St. Louis general sales department.

Mr. Williams will assume responsibility for sales management methods, procedures and performance and sales training functions for the entire company. Mr. Roberts will handle sales pricing for Bemis operations west of the Rockies.

Mr. Williams joined the company in 1942 as a sales representative at St. Helens, Ore. Mr. Roberts joined Bemis at the company's Boston offices in 1939.

●

Works Manager Named

SOUTH SHORE, KY.—The Hooker Chemical Corp. has appointed Jay P. Eggert works manager of the plant it is constructing near South Shore, Ky. He had been production superintendent of the company's plant in North Tonawanda, N.Y.

Cyanamid Addition

NEW YORK — A new addition to the staff of plant industry development has been announced by Dr. John F. Yost, director. Dr. Harry E. Scott has joined the agricultural division of American Cyanamid as an entomologist and will be primarily concerned with special insecticide development problems.

Dr. Harry E. Scott

Dr. Scott comes to Cyanamid from North Carolina State College where he was extension entomologist for the past seven years. Prior to this, he was a research advisor with the Canadian Department of Agriculture in Ottawa for five years, and a lecturer at Ontario Agricultural College in Guelph for seven years.

Dr. Scott graduated from Ontario Agricultural College with the degree of bachelor of science in agriculture in 1941, and obtained his Ph.D. in entomology from Cornell University in 1952.

●

Three to New Posts

A. A. Deverick Edward Brown

JERSEYVILLE, ILL. — Appointment of three men to sales positions with Baughman Manufacturing Co. here has been announced.

Allen A. Deverick, who had been regional sales manager for the firm with headquarters in Tulsa, Okla., has been named vice president in charge of sales. Before joining the Baughman Co., Mr. Deverick was in sales work with Pure Oil Co.; Compton, Inc., and Sunray Mid-Continent Oil Co.

Edward Brown has been appointed central district sales manager. Mr. Brown, who lives in Indianapolis, covers a territory that includes: Michigan, Wisconsin, Illinois, Indiana, Ohio, Kentucky and Tennessee. Before joining Baughman, Mr. Brown was a district sales manager for Midwest Body Co.

Zachary Dean, Tulsa, Okla., has been named sales manager for the western district of the company. For six years he has been an independent oil operator and drilling contractor in Kansas and Oklahoma.

The Baughman Co. manufactures bulk feed bodies, hog and cattle feeders, conveyors and automatic self-unloading transport bodies.

●

Cooperative Specialist

ST. LOUIS, MO.—Wm. T. Thompson, president of Thompson Chemicals Corp., with plants located in St. Louis, Mo., and Los Angeles, announced that W. L. Barrett has joined its sales staff.

Mr. Barrett will assume responsibility for a newly created post of cooperative specialist. This represents one aspect of the current expansion program of the Thompson Chemicals Corp.

For the past 12 years Mr. Barrett has managed the Agricultural Chemicals Division for Consumers Cooperative Assn. of Kansas City.

●

Appointed Representative

SEATTLE—The Joe Berger Co. of Seattle has been appointed to represent Pacific Agro Co. in the sale of all Agro specialty fertilizers and chemicals for the greenhouse and floriculture trade, Lee Fryer, Pacific Agro manager, announced.

Associated with Mr. Berger in this new sales program will be Bob Mehline, formerly northwest sales representative for Holland Bulb Co. of Mount Vernon, Wash.

●

Market Research Head

CLEVELAND — John A. Sherred has just been named manager of the market research and product development division of the petrochemical department of the Standard Oil Co. (Ohio), according to announcement by vice president Edward F. Morrill, who is also president of the Sohio Chemical Co.

Mr. Sherred will make his office headquarters in Cleveland. He was born in England and educated at Balliol College, Oxford, England, where he was a Walter Scott Foundation Scholar, a Sir Richard Stapley Scholar, a Herefordshire County Scholar and graduated with honors in 1939.

●

Assistant to President

CHICAGO—Jack McDonough has been named to the new position of assistant to the president of Meissner Engineers, Inc., it was announced by Robert C. Meissner, president of this Chicago-based engineering and construction management firm.

●

Named Property Manager

SKOKIE, ILL.—Dr. Allen T. Cole, Lakeland, Fla., minerals consultant, has been appointed property manager for the Florida and Tennessee phosphate operations of International Minerals & Chemical Corp. He will be in charge of acquisition of land reserves, utilization of properties prior to mining, and reclamation of mined-out areas.

Assisting Dr. Cole will be W. A. Stringfellow, reserves development engineer; A. J. Hahn, land reclamation engineer, and Cecil Stange, property superintendent. J. R. Hall will head the reserves acquisition program in the Tennessee field.

Executive Vice President

NEW YORK—The appointment of Norman E. Hathaway as executive vice president of Allied Chemical's Nitrogen Division, was announced by Jacob White, president of Nitrogen Division.

Norman E. Hathaway

Mr. Hathaway has been assistant to the president of Nitrogen Division since Jan. 1, 1960. Prior to joining Allied Chemical, he was vice president of Oronite Chemical, a subsidiary of Standard Oil of California.

Mr. Hathaway is an alumnus of the University of Maryland with a bachelor of science degree in chemical engineering.

●

Elected to Board

NEW YORK—At a recent meeting, Harry C. Hagerty, vice chairman of the board of the Metropolitan Life Insurance Co., was elected to the Commercial Solvents Corp. board of directors. Mr. Hagerty also serves on the boards of the First National City Bank, Radio Corporation of America, National Broadcasting Co., Erie Railroad, East River Savings Bank and the Rochester Gas and Electric Corp. He is a trustee of the Institute for the Crippled and Disabled, and of Notre Dame and Fordham Universities.

●

Agrico Sales Shifts

A. B. Crawley B. J. Farmer, Jr.

G. H. Walker C. E. Murray

NEW YORK — Agrico sales manager R. L. Waring, Jr., has announced the following recent changes in Agrico's field sales force:

At Knoxville, Tenn., former assistant manager, A. B. Crawley, becomes manager. New assistant manager, under Mr. Crawley, is B. J. Farmer, Jr., previously a field salesman at Knoxville.

G. H. Walker, former assistant manager at Cleveland, Ohio, has been named manager at Danville, Ill.

C. E. Murray has been named assistant manager at North Weymouth, Mass. Formerly a field salesman in New Jersey, Mr. Murray will work with B. E. Thorne, North Weymouth manager.

●

New Agronomist

POCATELLO, IDAHO — A newly appointed agronomist for the minerals and chemical division of the J. R. Simplot Co. is Bernard L. Brown. He will work with industry representatives, college and experiment station personnel and consumers in developing soil fertility data and improvement programs. He was formerly with Montana State College where he was extension soils specialist since April, 1958.

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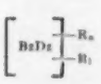
PATENTS and TRADEMARKS

2,940,844

Compositions and Method for Inhibiting the Growth of Plants. Patent issued June 14, 1960, to Hans Gysin, Basel, and Enrico Knusli, Riehen, near Basel, Switzerland, assignors to J. G. Geigy A.-G., Basel.

Compositions for inhibiting the growth of plants comprising an active ingredient a benzodiazine derivative corresponding to the formula:



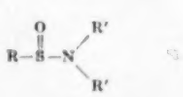
wherein BzDz represents a benzodiazine selected from the group consisting of cinnoline, quinazoline, phthalazine and quinoxaline, n represents an integer from 1 to 3, R independently in each occurrence, represents a member selected from the group consisting of chlorine, lower alkylamino, lower dialkylamino, lower alkoxy, lower alkenyloxy, lower alkylmercapto, lower alkenylmercapto, piperidino and morpholino radicals, and R_1 represents a member selected from the group consisting of hydrogen, an amino group, a lower alkyl, a phenyl and a benzyl radical in an amount and concentration sufficient to inhibit the growth of plants, and a solid, pulverulent carrier.

2,946,714

Fungicidal Compositions Comprising Reaction Products of Ethylene and Sulfur. Patent issued July 26, 1960, to Irving D. Webb and John W. Yale, Jr., Yorba Linda, Cal., assignors to Collier Carbon and Chemical Corp., Los Angeles. A fungicidal composition comprising an inert fungicidal carrier material and, as the essential fungitoxic ingredient, a normally liquid product obtained by heating ethylene with elemental sulfur at a reaction temperature between about 75° C. and about 250° C. and at a pressure between about 200 and about 5000 p.s.i.g., and thereafter separating from the product so obtained the components thereof which boil below about 140° C. under about 0.4 mm. pressure, the proportions of ethylene and sulfur and the time of said heating being such that the said product contains between 1 and about 6 atoms of sulfur per molecule of ethylene.

2,946,715

Insecticidal Composition Containing a Sulfonamide and Allethrin or Pyrethrum. Patent issued July 26, 1960, to Roy E. Stansbury and Rector P. Louthan, Bartlesville, Okla., assignors to Phillips Petroleum Co. A method of paralyzing and killing insects which comprises exposing such insects to the action of an insecticidal composition containing a sulfonamide and a pyrethrum-like compound in a ratio in the range from 2.5:1 to 150:1 on a weight basis, wherein said sulfonamide has the formula



wherein R and R′ are hydrocarbon radicals selected from the group consisting of aryl, saturated acyclic and saturated alicyclic radicals and combinations of such radicals, each R contains from 1 to 16 carbon atoms, each R′ contains from 1 to 10 carbon atoms, and the total carbon atoms in R plus the R's does not exceed 25, and wherein the said pyrethrum-like compound is selected from the group consisting of pyrethrum and allethrin.

2,946,718

Synergistic Insecticidal Compositions. Patent issued July 26, 1960, to Howard A. Jones and John A. Garman, Baltimore, Md., and Berton C. Dickinson, Lyndonville, N.Y., assignors to Food Machinery & Chemical Corp., New York. The method of killing insects which comprises applying to the insects and their habitat a synergistic insecticidal composition comprising O,O-dimethyl S-(1,2-dicarbethoxy ethyl)dithiophosphate and phenyl carbamate, wherein said components are present in the ratio of about two parts of said carbamate per part of said dithiophosphate.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of $25 must accompany each notice of opposition.

Fenac, in capital letters, for herbicides. Filed Oct. 12, 1959, by Hooker Chemical Corp., Niagara Falls, N.Y. First use Dec. 11, 1958.

Solar, in capital letters, for fertilizing solution. Filed June 5, 1959, by Solar Nitrogen Chemicals, Inc., Lima, Ohio. First use April 10, 1959.

Design, circular drawing with words Gran-Phosphate inscribed. Filed July 23, 1959, by Cooperative Grange League Federation Exchange, Inc., Ithaca, N.Y. First use May 15, 1935.

Combo, in capital letters, for combination lawn food and weed killer. Filed April 7, 1960, by Lee Patten Seed Co., Jersey City, N.J. First use Aug. 11, 1959.

VLR, in capital letters, for diluent for insecticide and pesticide dusts. Filed June 18, 1959, by C. K. Williams & Co., East St. Louis, Ill. First use May 13, 1958.

Pax, in hand-drawn capital letters, for fertilizers. Filed by Kelley-Western Seed Co., Salt Lake City. Pub. by Utah Cooperative Assn., d.b.a. PAX Co., Salt Lake City.

Design, drawing of house and trees with words Mock's Superturf and Weeda-Lawn inscribed, for chemical weed exterminator. Filed July 28, 1958, by Mock Seed Co., Pittsburgh, Pa. First use May 1, 1958.

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Soybean Fertilization Study May Develop Big Sales Potential for Plant Food Trade

PROGRESS is being made by the fertilizer industry in developing a huge potential market for supplying plant nutrients to soybean growers. This potential, according to agronomists and others who keep closely in touch with the situation, is of substantial size as is easily seen by a study of acreage figures and other data on characteristics of the soybean plant.

Soybean acreage is on the increase. This year, it is in the magnitude of 25,000,000 acres as compared to 3,473,000 in 1930. The amount of land devoted to this crop has increased steadily, and yields have also moved upward. But there are still many unexplored areas of information on this plant and its nutritional needs. Before this huge potential market for fertilizer can be realized, steps must be taken to find out how to increase yields more dramatically than can be done at present. Unlike corn, which has been made to nearly double its average yield through fertilization and other good cultural practices, soybeans have increased in average yield less than 5 bushels an acre in the period between 1929 and 1959.

Why this statistic is true is pointed out by Dr. A. J. Ohlrogge, Purdue University agronomist. "One reason seems very clear why soybean yields have not increased at the same rate as corn," he says. "Our 'know-how' in corn production has reached the point where it is easy to prescribe treatments which, within a year, will double or triple the yield of a field yielding 50 bu. corn an acre.

"This is not true for a field of soybeans yielding 20 bu. an acre. One reason is that soybeans do not respond consistently to direct fertilization; a fact recognized by many research workers both in the U.S. and in Japan. However, this characteristic is not unique with soybeans, since similar statements were made about corn 20 years ago.

"We have had good corn hybrids for over 20 years and they are being improved all the time. On the other hand, comparable improvement in soybeans has been under way for only five or six years." He added, however, that hybrid soybeans have recently been introduced and these, plus others yet to come, will have an influence on the response of soybeans to fertilization.

Connecting up these facts with additional information on the soybean potential is an exercise of considerable interest to the fertilizer salesman. It takes a lot of plant nutrients to produce soybeans even at the yield levels of today. A 40 bu. an acre yield removes from an acre 150 lb. nitrogen; 35 lb. P_2O_5, and 55 lb. K_2O. On this basis, the 1959 crop of 530,000,000 bu. of soybeans removed approximately 993,750 tons nitrogen, 240,000 tons P_2O_5, and 370,000 tons K_2O.

The first ten states in order of decreasing total production of soybeans in 1959 were Illinois, Iowa, Indiana, Missouri, Arkansas, Minnesota, Ohio, Mississippi, North Carolina, and Kansas. There are many other states contributing significantly to the over-all soybean acreage.

Three research projects on soybean fertilization are in operation to study various aspects of the problem. These are headed by Dr. J. B. Peterson, Purdue University, working under the jurisdiction of the National Soybean Crop Improvement Council.

The groups are attacking the problem from three logical angles: 1. Study of factors affecting pod-set, yield and nodulation; 2. survey of mineral nutrition, including the agronomic characterization of soybeans; and 3. study of soil fertility requirements of different genetic lines.

Only those areas of research are being investigated which show the greatest promise for solving the soybean fertilization problems. Included are finding the metabolic pathways within the plant; studying the influence of environmental factors on the fruiting mechanism; and the interactions between variety and nutrient uptake and utilization in the plant.

The size and extent of this project are hinted at by the fact that there are some 1,000 soybean varieties for which specific response curves have not yet been developed. The answers may point to a splendid additional market for the industry.

Not only is it important that such a study is getting under way, but the manner of undertaking it is also significant. Here is a case where the interested industries are responding to an urgent need for information by contributing voluntarily to the project. It is laudable that it was not left up to government agencies to accomplish these ends, even though the latter would no doubt do a thorough job.

We feel that in the past, too much reliance has been placed on government in areas where the industry itself could and should have taken bold steps. The current soybean enterprise should help point the way toward more independence on the part of the fertilizer industry in seeking not only new markets, but in solidifying its gains in other fields as well.

Farmers Changing

OF GREAT significance to every type of supplier, who considers the farmers of the United States his chief market, are the remarks of H. J. Hulls, Jr., New Holland Machine Co., made at the recent American Marketing Assn. conference:

"Right now, at this minute, the farmer is going through a metamorphosis. The farm is taking on more and more the aspects of a factory. The farmer is thinking more and more of production line methods and materials handling systems. Because of his tremendous investment in machinery, he is starting to think in terms of capital investment, amortization and returns on capital employed.

"The last craftsman is being integrated into our production society. And agricultural marketing in the future might no longer be consumer marketing but become industrial marketing.

"And as the farms change, so will the farmer. New and different influences will change his attitudes, his desires, his beliefs. And the agricultural products industry will operate under a complete new set of ground rules in approach to marketing."

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INDUSTRY MEETINGS

Aug. 16-17 — Midwest Fertilizer Industry Safety Training School, Chicago.

Aug. 16-20 — Economic Entomology Workshop, Agricultural Building, University of Nevada, Reno.

Aug. 25-27—Fertilizer industry safety school for supervisors, Cape Fear Hotel, Wilmington, N.C.

Aug. 25-27—Mississippi Soil Fertility and Plant Food Council, first annual convention, Buena Vista Hotel, Biloxi, Miss.

Aug. 28-31—Fifty-second annual meeting, American Phytopathological Society, Green Lake, Wis.

Sept. 12-14—Eighth annual meeting and conference, Canadian Agricultural Chemicals Assn., Britannia Hotel, Lake of Bays, Muskoka, Ont., Can.

Sept. 24-26 — Western Agricultural Chemicals Assn. 31st annual meeting, Palm Springs Riviera Hotel, Palm Springs, Cal.

Sept. 27-29 — National Agricultural Chemicals Assn. annual convention, Coronado Hotel, Coronado, Cal.

Sept. 29-30 — Northeast Fertilizer Conference, Hotel Hershey, Hershey, Pa.

Oct. 5-6—Southeast Fertilizer Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Oct. 13—Association of American Control Officials' States' Relations Committee meeting, Shoreham Hotel, Washington, D.C.

Oct. 14—Association of American Control Officials annual meeting, Shoreham Hotel, Washington, D.C.

Oct. 17-21—National Safety Congress, 48th annual meeting. Fertilizer Section meets at Morrison Hotel, Chicago.

Oct. 27-28—Eastern Branch meeting, Entomological Society of America, New Yorker Hotel, New York.

Nov. 2-4—Fertilizer Industry Round Table, Hotel Mayflower, Washington, D.C.

Nov. 3-4—Pacific Northwest Plant Food Assn. 1960 annual convention, Boise, Idaho.

Nov. 13-15—California Fertilizer Assn., 37th annual meeting, del Coronado Hotel, Coronado, Cal.

Nov. 14-19—Mexican Association of Insecticide and Fertilizer Manufacturers, Merida, Yucatan.

Nov. 28-30 — Soil and Crop Science Society of Florida, Fort Harrison Hotel, Clearwater, Fla.

Nov. 28-Dec. 1—Entomological Society of America, Chalfonte-Haddon Hall Hotel, Atlantic City, N.J.

Nov. 30 — New Jersey annual fertilizer conference, Rutgers University, New Brunswick, N.J. Sponsored by Plant Food Educational Society of New Jersey.

Dec. 12-14 — North Central Weed Control Conference, Hotel Schroeder, Milwaukee, Wis. T. W. Tibbets, Department of Horticulture, University of Wisconsin, Madison, public relations committee.

1961

Jan. 5-7 — Eleventh annual convention, Agricultural Aircraft Assn., Inc., Hotel El Dorado, Fresno, Cal.

Jan. 12-13—Arizona Aerial Applicators Assn. 8th annual conference, The Wigwam, Litchfield Park, Ariz.

Jan. 19-20 — 14th annual Southern Farm Forum, Roosevelt Hotel, New Orleans, La.

June 27-29—Twelfth Annual Fertilizer Conference of the Pacific Northwest, Marion Hotel, Salem, Ore. Chairman: B. R. Bertramson, agronomist, Washington State University, Pullman.

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Ammonium Nitrate Booklet Instructs on Fire Hazard

WASHINGTON — The behavior of ammonium nitrate in fires, conditions necessary for an explosion, ammonium nitrate as an oxidizing agent, recommended storage in buildings, records of fires and explosions, and how to fight an ammonium nitrate fire, are contained in a new booklet published by the National Fire Protection Assn.

The National Plant Food Institute, 1700 K Street, N.W., Washington 6, D. C., is making these booklets available to the fertilizer industry at 10¢ a copy.

CALENDAR FOR 1960-61

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Seed and Fertilizer Tests Planned for 1961

TUCSON, ARIZ. — Clay-encased seeds, each carrying its own fertilizer and insect and rodent repellents, will be sown on sparse Arizona rangeland next summer in an effort to bring it back to life, it was reported here recently.

Seed is to be sown from a low-flying plane in the University of Arizona experiment.

Though no specific site has been chosen, Dr. Andrew L. McComb, head of the U. of A. watershed management department, has reported that about 480 acres of federal land will be used under controlled conditions.

For comparisons, part of the parcel will be sprinkled with seed from the air and others from the ground, while some will not be seeded at all. Both pelleted and non-pelleted seed are to be tried.

Only in this way, Mr. McComb pointed out, can results be accurately measured by the University scientists who run the test under a $50,000 Bureau of Land Management grant.

The researchers will also study, in a parallel project, the effects of available moisture on soil with new vegetation.

JOINS FIRM

INDIANAPOLIS, IND.—Merle P. Speakman, who retired in June as vice president of the J. I. Holcomb Manufacturing Co. after 37 years of service, has been named vice president in charge of sales in the Indianapolis area by Federal Chemical Co., manufacturer of the Arab Pest Control line of products.

Increase Fertilizer Use

CORPUS CHRISTI, TEXAS — Farmers in this area are increasing the amount of fertilizer each year. Fertilizer usage in Nueces County rose from 500 tons three years ago to approximately 3,000 tons in 1960.

Most of this was brought about by test plots and actual field use. The results were often publicized and farmers visited the treated fields to see the results.

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(Discussing promising new insecticide compounds at Hercules' Agricultural Chemicals Laboratory are: George Buntin, discoverer of toxaphene; Dr. E. N. Woodbury, laboratory supervisor; Dr. Keith D. Ihde, research entomologist; Dr. Arthur D. Lohr, supervisor, Naval Stores research; and Dr. William R. Diveley, a discoverer of Delnav.)

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Continuous research is carried on by Hercules Powder Company to find new chemicals for agriculture, and to find better ways to utilize the tools now available. Many of the people doing this work were engaged in the original development of toxaphene. Besides laboratory research, Hercules has placed great emphasis upon field testing and large-scale demonstrations. From such applied research in cotton insect control, for example, has come information to help farmers get better yields while lowering their production costs.

TOXAPHENE

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